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HONDA'S TRICK 1000 SHAFTY



Motorcyclist



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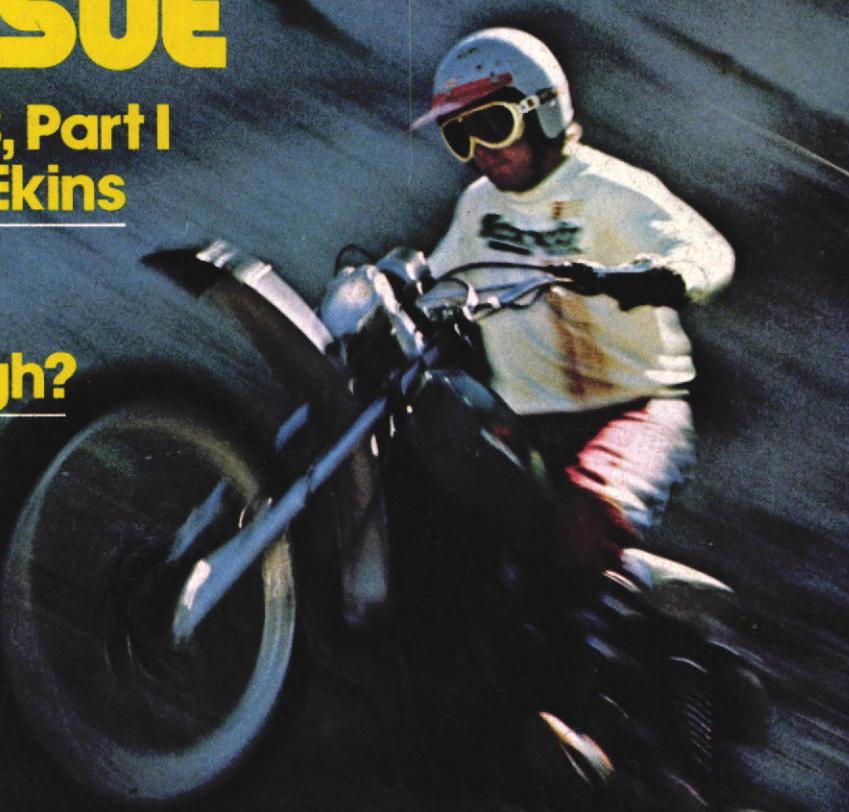
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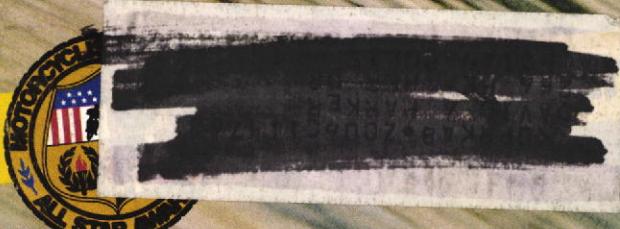
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Awards are great, no matter what they're for. But they're especially rewarding if you've earned them doing what you happen to like best; riding motorcycles. If they're presented by thousands of people who think you do it better than anybody else, all the better.

That's what the MOTORCYCLIST ALL-STAR AWARD program is all about; giving recognition to deserving motorcycle riders who compete in a world where only a handful can even hope to receive world-wide acclaim. To be a title holder requires the backing of a large organization. One also has to be good, but without

"—today's fans don't always flock to the winners when it comes to personal loyalties."

the financial support there's no hope of being a National or World Champion. It just doesn't work that way, and it never will.

While there's nothing wrong with that situation, it does tend to minimize the accomplishments of riders whose chosen aspect of motorcycling lacks the commercial possibilities of the seemingly more glamourous moto-cross and road racing. For this reason the ALL STAR AWARDS were created and will continue to be supported in the years to come.

The readers of MOTORCYCLIST obviously agree with us. They returned over 27,000 ballots, voting for their favorites in the sixteen separate categories. To be sure, the pros like Kenny Roberts and Roger DeCoster got their share of votes, but so did many of the lesser known riders, proving that today's fans don't always flock to the winners when it comes to personal loyalties.

Categories that some might feel are rather obscure, such as drag racing, enduro and trials riding, proved to have very enthusiastic followings and the balloting was extremely close, evidence that the forms of competition that get the most exposure are not necessarily of the most interest to the wide-based American enthusiast. Bill Uhl, Lane Leavitt and T.C. Christenson have followings just like Roberts and DeCoster, yet their exploits are not as widely reported.

The ALL-STAR program has made it possible for the true enthusiasts to be heard. Based on the response, he really wants to be heard. Last year we were surprised with over 17,000 returns. This year's 27,000-plus is staggering, causing us to wonder just what will happen in 1976. How about 1977?

Tony Murphy-Editor



Motorcyclist

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cover

Honda makes another serious leap into the off-road world with their MR 175 two-stroke. Photo by Bob D'Olive

THE HONDA REPORT

May, 1975 HR #17

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The Latest 1975 Honda Motorcycles Now in Honda Dealer Showrooms.

New "Hondacare" Program Introduced.

At last, you can see more of the 1975 Honda motorcycles. It's an exciting group which includes the fabulous GL-1000 flat-four tourer, the powerful two-stroke enduro-styled MR-175 and the great new TL-250 trials bike. We think you'll agree that waiting for them was well worth it. Somewhere in the new lineup, there's a bike for you!

If you own a Honda motorcycle, you probably take pride in doing some of the routine maintenance yourself, and enjoy doing it. However, there are those occasions when you'll want to make sure your Honda has a professional check-up. When that happens, it just makes sense that the people who can take the best care of your Honda are the well-trained service personnel at your nearby Honda dealership. After all, they care as much about your bike as you do. It's just a part of what's called *Hondacare*™. And Honda Service departments are geared to have almost all the necessary parts on hand or readily available via Honda's exclusive computerized parts ordering system. So whenever a Honda needs repair or maintenance, the best place to have it done is at a Honda dealership. For *Hondacare*!

Honda Establishes U.S. Research and Development Center.

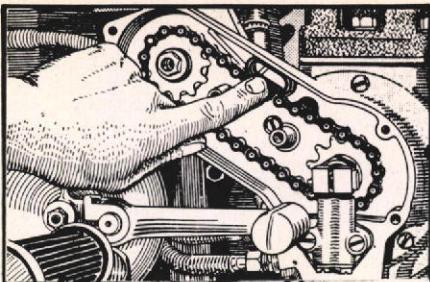
In a continuing effort to keep abreast of the desires of the American motorcycling public, Honda has established a research and development center in the United States. Located in California, the center will be manned by a special staff of engineers whose sole purpose will be to see that Honda products meet the needs and desires of American riders.

New Hondaline Helmets Soon on Display.

New Hondaline™ helmets offering additional styles and a new safety feature will soon be available at many Honda dealer's. The helmets meet or exceed all safety requirements of the United States Department of Transportation. One style is highlighted by distinctive sweeping red and blue striping on a white background. Another is designed with gold and white stripes on a brown helmet. The stripes are more than just good-looking, however; at night they are highly reflective, giving the wearer safety plus styling. See these new Hondaline helmets soon.

Honda Trials Team Tops in Its First Time Out.

The newly formed Honda Trials team took first, second, third and fifth places in the British-American Cup Trial in Patterson, California. Leading the expert class scoring was Marland Whaley, followed by Mark Eggar, George Smith III and Joe Guglielmelli in fifth place. All were riding factory-prepared versions of the new Honda TL-250 trials bike available only at your Honda dealer's.



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Countless colorful yarns have been spun around the Model T Ford, about its rugged, simple, enduring and endearing and sometimes exasperating mannerisms. That critter could step off a sheer four-foot dirt bank and keep right on going like an Olympic cross-country runner, waddle through axle-deep mud that would give a Six Days artist a fit. A burned-out connecting rod bearing could be replaced with a piece out of a hunter's leather belt, then chug 20 miles back home through the woods. It was the only vehicle in which "modern" man dared venture west of the Mississippi. It conquered the west because it was the only flier with a dealer and parts outpost coast to coast; every town big enough to support a blacksmith shop hung a Ford script shingle from the smithy's loft. And it was simple. The Chevrolet Brothers got their start building speed equipment for Ford. Nothing that ever followed the T made such a lasting imprint on the transportation system that ensued. Because even though inexpensive, it was made of the finest materials available, and it was simple.

Until this year vestiges of that simple format still applied to the manufacture of motorcycles. The theory dictated they be kept simple and easy to repair at all cost. The reason was basic, and understandable to those

"Build an enthusiast bike and it'd better wind up in an enthusiast's hands . . . "

still able to recall that it was the T that put motorcycling on the trailer with cheap, reliable transportation that virtually anyone could overhaul.

But now, at long last, Suzuki and Honda have decided to hell with that; times have changed, and so must the formula. Folks don't maintain bikes anymore, they ride 'em hard and put 'em away wet, drive 'em till they drop, then drag 'em in and get whatever it was that broke replaced. Build an enthusiast bike and it'd better wind up in an enthusiast's hands or you're in big trouble. Better to design the consumer machine, one that thrives on abuse and neglect and stands a fighting chance of survival.

How? Give its systems backup systems, and the backup systems backup systems. Don't make it to work on, make it to last through 47 shades of hell. Make it big and tough and heavy, and when you're through make it look and act as much like a motorcycle as humanly possible. Simplicity? Forget it. That's a loser. Leave it to the Europeans and the boys in Milwaukee.

Hopefully there will always remain examples of the original simple motorcycle . . . just because. But the Rotary and the Wing mark the launch of the All-American Supercycle, the abusable, car-like grand tourer that defies destruction. It took guts to break tradition and make it, and they did a remarkable job. For although posh and sophisticated, and virtually without trace of vibration, both are still exciting to handle. Only what's to become of us tinkerers, and the Tees we used to tinker so well?

Bob Greene—Executive Editor



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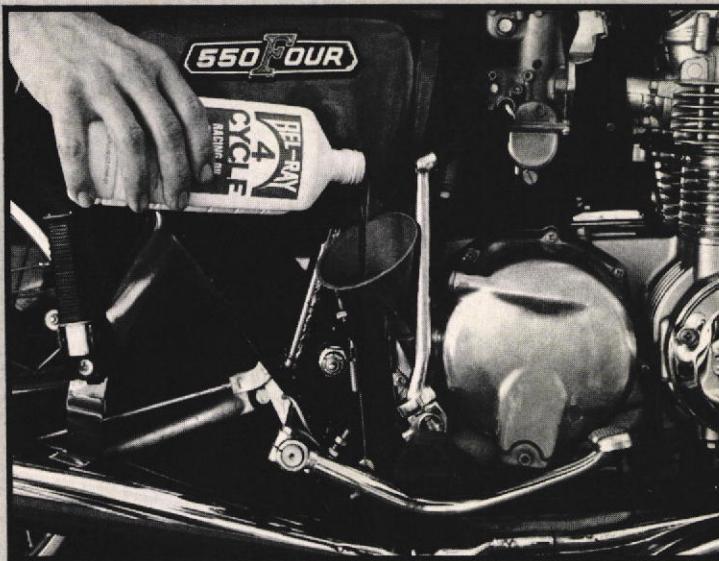
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on the line

I'm Really Peeooed!

My subscription to *Motorcyclist* has just about expired, so I'm taking this time to write and give you my honest opinion of your magazine for the year I have subscribed to it. The name *Motorcyclist* on the cover should be changed to Honda or Kawasaki, Suzuki or maybe even Yamaha. Your magazine is so pro-Japanese from cover to cover I can't see how you people can possibly give a non-Japanese motorcycle a fair and impartial evaluation. It is beyond me how you people from *Motorcyclist* can fail to give more time and space in your magazine to British, German and even the American motorcycles. Your June issue had one of the sorriest articles on the Ducati I've ever seen, less than a page of vague below-par information. In contrast, your article on the Suzuki Rotary was eight pages of raves and superlatives on how it's the newest practical power concept in 90 years, and other pertinent information. It's a shame you couldn't do the same for one of the other makes, such as the Norton 850 or perhaps the Harley-Davidson. I believe other persons would agree with what I've mentioned. I also believe you could at least do another article on the Ducati and possibly do a more thorough job, or is it too much to ask that you do a decent job on non-Japanese equipment? I would imagine that the publishers of *Motorcyclist* could give a damn less what I thought; you probably take the stand "if you don't want Japanese propaganda, don't read it". Well sir, that is exactly what I intend to do.

K.A. Tanglois
L.A., Calif.

We are always sorry on the rare expression of regret such as yours, that we have let even one reader down, even though *Motorcyclist* sales figures—tripled in the last three years—indicate the contrary on behalf of the majority of your fellow readers. If we appear pro-Japanese it is only a reflection of the pro-Japanese owners and readers, and we feel obliged to serve the interests of that majority for obvious mutual reasons even though we personally may be pro-European or pro-American in many instances.

Although we had done considerable technical coverage on the Ducati in advance of the other magazines prior to its final public showing and acceptance here in America—and obviously prior to your coming aboard—we admit to being woefully short on actual test data and plan to correct that within the next few months, just as we were the first to elaborate on the current 750 V-twin. Regarding Harley and Norton, again, guilty but only because of their lack of interest in the areas of new design. Be assured that when Harley-Davidson offers up their new 880 V-twin and Norton and Triumph

bring forth their left-shift series, *Motorcyclist* will be right on top of them.—Ed.

Slow Reader

Do you have a comparison test coming up on the 125 Enduro Bunch? I'm planning on buying one of these motorcycles and I've got it narrowed down to a Yamaha DT, Suzuki TS, or Honda MT. I'm looking for a reliable, easy to maintain and reputable bike—I'll use it mostly for street riding but it'll also take a bit of rough dirt riding too. Any suggestions on which one I should lay down my cash for? Sure would appreciate your opinion.

Marcell Ferrazzi
Ontario, Canada

You been in hibernation or something? We know it gets cold up there but try chipping the ice off your August '74 copy of the book. Virtually the whole issue was dedicated to your question.—Ed.

GOTCHA

I must congratulate you on a fine 250 comparison test in your January issue. However, on page 56 of that issue, check out the direct side view of the Penton. I do believe that that is the very same picture used on page 26 of your Oct.'74 issue when comparing 175's. And the close-up of the speedometer in both issues have the exact same mileage also. And I'll be five dollars richer if I'm correct. By the way, which is which? Other than that, a truly fine test from a truly fine magazine. Keep up the great comparison tests.

Scott Lowry
San Antonio, TX

And give this man \$5.00, you're correct. We didn't get the 250 in time for the photo session so we used the 175. Both bikes are visually indistinguishable, the odometer ratted on us.—Ed.

New Alpina

I am the happy and proud owner of a 1974 Bultaco Alpina 350 and purchased my bike after reading your road test in the May '74 issue of *Motorcyclist*.

Naturally, when I saw the cover of your Feb. '75 issue indicating a test of the '75 Alpina, I bought the mag. I was interested in the new developments, one of which was the lengthened swing arm and the resulting longer wheel base.

However, after examining the specs for the new model and comparing with the specs in your May issue I fail to see any difference. The specs on page 81 of the Feb. issue show the wheel base as 53". The specs on page 33 of your May issue show the wheel base as 51.5". Both sets of specs give the total length of the bikes as 81". How can the swing arm and wheel base be greater but the total lengths the same? Check the two sets of specs and you'll see what I mean.

Also, you listed the weight of the newer model at 238 lbs. with the chromemoly frame. The owners manual of my

'74 model lists the weight at 220 lbs. I don't get the advantage of the chromemoly frame.

Nevertheless, I enjoy my Alpina immensely and use it for both trials and enduro competition.

Ed Walter
Reinholds, PA

Thanks for your interest in our magazine. Your letter brought up a few things of interest, some of which need explaining. Another which is my mistake.

The mistake was showing the taillight in an up position as it was on early Alpinas. The overall dimension of this bike is taken from the front edge of the front tire to the taillight lens. The drawing shows the lens and rear tire to be the same, they're not. Also, the lower 81" dimension is not correct. On the early bike it should be 78", the other, 79.5". As for the weight of the bike, we weigh them full of gas with oil in the gearbox and forks. These lighter weights given in the manual are dry weights. Unfortunately we don't ride 'em that way. (In our May '74 issue we found the Alp to weigh 246 pounds wet.)—Dave Ekins.

Much Ado About Nothing

Your review of the Benelli 500 Quattro is as transparent as unleaded gasoline. It appears that you've sold out to Italian hospitality by substituting honesty with "being nice". Who ever heard of a hard to find ignition switch praised for being "well protected"?—We know what you mean. At 482 pounds and \$2875, the Benelli kitchen has made a pregnant attempt at four-cylinder teriyaki. For the time being I suggest that De Tomaso stick to spaghetti.

Alan Strasbaugh
Seal Beach, Calif.

Let's be honest, Al. The quote you give is incomplete, out of context, as they say. The caption you refer to reads: "Ignition switch placement under tank is well protected but awkward to find in the dark." As we see it, that's both sides of the coin. Right?—Ed

At Least The Color Was Right!

I enjoy your interviews, articles and tests. So much for the mushy stuff. Now on to my reason for writing. Ever hear of a Yamaha SC500? Better look quick cause the Yammer people are trying to throw a rug over this lemon before it spoils their reputation with open class motocrossers.

I would like to hear from someone who has an SC500 which has run consistently without major repair for a period of no less than 30 days, or one moto, whichever came first. So far, in six months of ownership I have been through three pistons, two cylinders, four sets of rings, a complete electrical system and about a bushel of spark plugs. All this and I managed to finish only one MX.

In closing, HELP. I just found out the SC500 depreciates at a rate of \$100 per month for the first seven months. At this rate, would I have to pay the scrapyard \$900 to take the monster off my hands after two years?

Tony Smith
Brookhaven, Miss.

Are the rest of you SC500 riders going to stand for this?! Is Tony right or is he really a Suzuki dealer on the side?—Ed.

Down To Earth

It is refreshing to read a down-to-earth project. (Yamaha 360 Project Bike, March issue of *Motorcyclist*, page 50) For the price of a new, 1975 model scooter, \$1100.00 or more, a super sano bike can be put together. Thank you for your sanity.

Truman Toad
Marietta, Ga.

High On Four-Stroke

I enjoy your magazine more than any other magazine on the market, because it has something for every type of rider.

One motorcycle sport I haven't seen anything about in print is Class "A" and "B" Professional Hill Climbing. I heard it isn't too popular out west, but here in District 6 it's a big attraction.

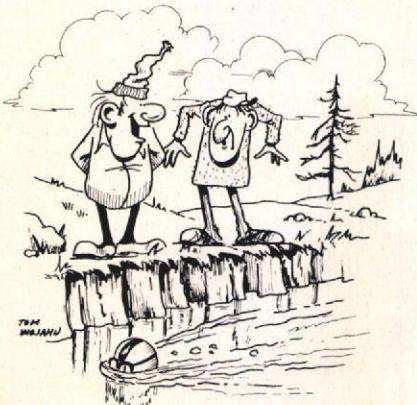
Perhaps some of your readers would like to read about a sport where the 4-strokes still dominate. After all, what 2-stroke can climb a steep 285 foot irregular hill in five seconds? That ought to stir up some angry interest!

Phil Moss
York, Pa.

Let's let the readers decide. Is hillclimbing really all that popular?—Ed.

Dirt Is Dirty

I enjoy your magazine but it seems that the last couple of issues you're striving to become a dirt bike magazine with a few articles on cafe racers and a test report on a street bike occasionally. I personally would like to see more tests on the larger street machines such as the Sportster, Norton 850, Triumph 750s, and I've been really itching to see a test report or hear more about the new 883 that Harley is supposedly putting out. I realize you're trying to cover all aspects of motorcycle riding, but I wish you



"There's a guy that really knows how to waterproof an engine!"

would keep the balance and not lean more toward one aspect than the other.

What about a comparison test between street bikes of 750 cc and above? I'd love to see it and I'm sure a lot of other people would too. I've never seen another magazine do such a report, so, come on, why not make it a first?

Craig Dianbauer
Garden City, N.Y.

Smashing idea! Why didn't we think of it three years ago? Or did we? We certainly did.—Ed.

Exhibition Info

I just finished reading the article on the Kawasaki Z-1 chassis tune in your Feb.'75 issue. I was wondering if you

could find out where I could buy a seat such as the one on the Ron Scrima Z-1. Also could you forward the address and price for a catalog from Exhibition Engineering? Thank you for your help.

Jerome Tarpey
La Porte, Texas

You can contact Ron Scrima direct at Exhibition Engineering, 7762 Gloria St., Van Nuys, Ca. 91406—Ed.

Uhl Fan

I have voted for Bill Uhl—"Man of the Year." I know for a fact Bill has gone through some very BIG obstacles in the last year. He worked so hard to make a good showing on his Can-Am, not only for himself but for motorcycling. In the

The critics agree: Bates Fairings are your best buy.



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ON THE LINE continued

1973 I.S.D.T. in Massachusetts his mother died in a motel room during the night of the third day. Bill went on to become the TOP AMERICAN of that "Olympic" event. His mother was his long-time number one fan.

This year his only "factory" support was his wife. He, on a 175cc, tied with Carl Crane on a 250cc and Jack Penton on a 400cc for the 1974 Two-day Trials Series. Bill won one of the five American Gold Medals in Italy this year. Please strongly consider Bill for the 1974 "Man of the Year."

Deb Rush
Boise, Idaho

Although Bill didn't make it as our reader's choice for Man of the Year, he did take the Enduro Rider All-Star Award. See final results in this issue.—Ed.

BMW Of Bike Books

I would find a road test on the BMW, Moto-Guzzi and the shaft drive Honda very interesting. How about it? I must tell you I find your magazine the best on the market. I guess it is like the BMW of Motorcycle magazines.

B. Roberton
Winnipeg, Manitoba, Canada

Adios

Just about two years ago I began to pick up your magazine from time to time. Its great articles on touring and camping by cycle as well as service and maintenance seemed to get better with each issue. So, I purchased a subscription for my wife who rides shotgun for me on her BMW R75/5 (while I pull our mini-camper trailer with my R75/5).

Of course, just about that time, the magazine made a 180-degree turn in its format and philosophy and has now become a racing, moto-cross and other off-the-road cycle magazine.

So, I will not be renewing the subscription but will miss the old magazine which was more to my taste than the new one.

David J. Raibert
Mahwah, NJ

Sorry to see you cut out, Dave. True, we have veered off into the dirt to a greater extent during the last year, but frankly, yours is one of the few letters received expressing regret of the change in format. Our job is to satisfy you. Let's sound off.—Ed.



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(Act of August 12, 1970: Section 3685, Title 39, United States Code).

1. Title of publication: Motorcyclist
2. Date of filing: August 29, 1974
3. Frequency of issue: Monthly
4. Location of known office of publication: 8490 Sunset Blvd., Los Angeles, CA 90069
5. Location of the headquarters or general business offices of the publishers: 8490 Sunset Blvd., Los Angeles, CA 90069
6. Names and addresses of Publisher: Dick Day, 8490 Sunset Blvd., Los Angeles, CA 90069; Editor: Tony Murphy, 8490 Sunset Blvd., Los Angeles, CA 90069; Managing Editor: Donald Evans, 8490 Sunset Blvd., Los Angeles, CA 90069
7. Owner: Peterson Publishing Co., 8490 Sunset Blvd., Los Angeles, CA 90069; Robert E. Petersen, 8490 Sunset Blvd., Los Angeles, CA 90069
8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities: None

9. For optional completion by publishers mailing at the regular rates (Section 132.121, Postal Service Manual):

39 U.S.C. 3626 provides in pertinent part: "No person who would have been entitled to mail matter under former section 4359 of this title shall mail such matter at the rates provided under this subsection unless he files annually with the Postal Service a written request for permission to mail matter at such rates."

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Richard L. Day, Publisher

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11. Extent and nature of circulation:

	Actual No. Copies Each Issue During Preceding 12 Months	Average No. Copies Each Issue During Published 12 Months	Single Issue Copies Published Nearest to Filing Date
a. Total No. copies printed	205,004	232,560	
b. Paid circulation			
1. Sales through dealers and carriers, street vendors and counter sales	70,635	77,219	
2. Mail subscriptions	31,652	40,480	
c. Total paid circulation	102,287	117,699	
d. Free distribution by mail, carrier or other means			
1. Samples, complimentary, and other free copies	905	873	
2. Copies distributed to news agents, but not sold	93,306	105,920	
e. Total (Sum of C and D)	196,498	224,492	
f. Office use, left-over, unaccounted, spoiled after printing	8,506	8,068	
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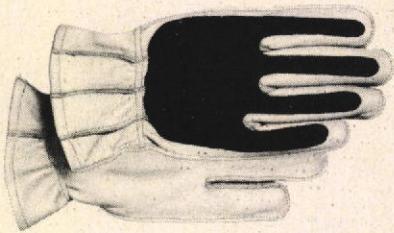
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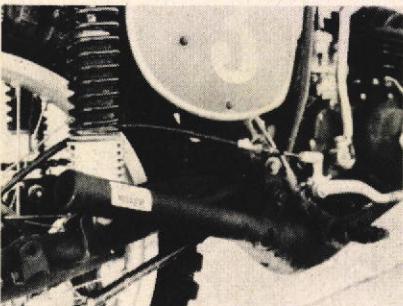
accessory shop



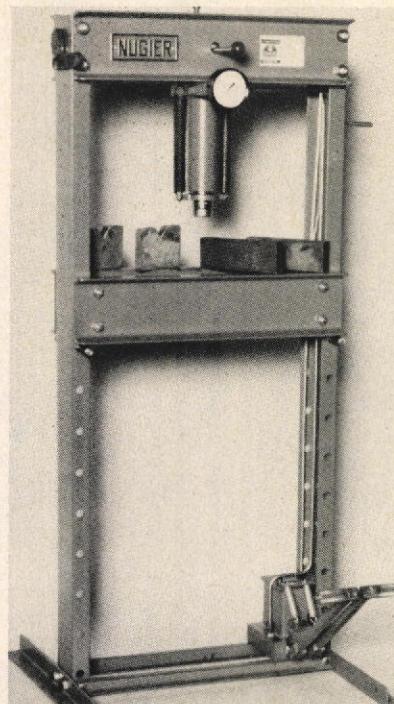
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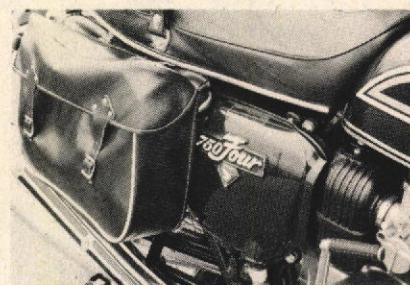
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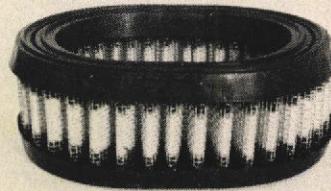


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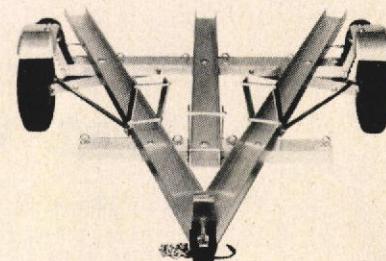


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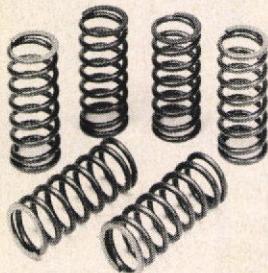
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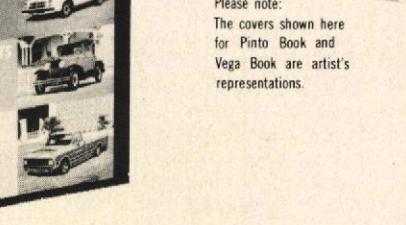
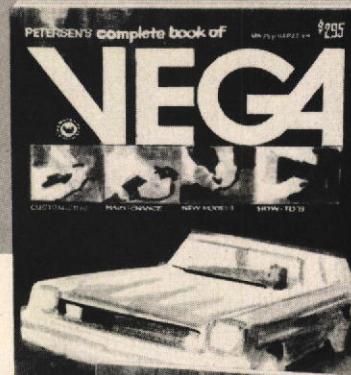
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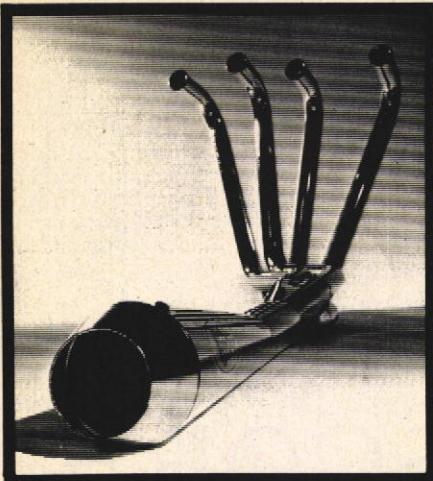
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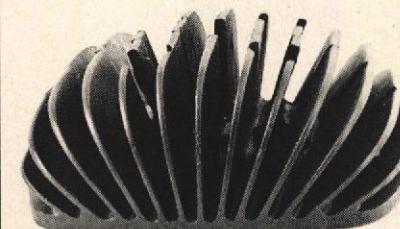
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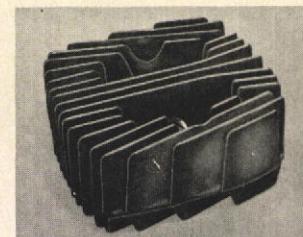
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HONDA SCORES AT S.C.O.R.E.



Wayne Cook and Steve Halladay teamed up on a 250cc Honda to take first in their class and first overall in the SCORE sponsored Parker 400 off-road race.



Second overall and open class honors went to the oversize XL Honda of late entries Gene Cannady and Al Baker. The actual displacement was listed as 450ccs.



TRIPES SIGNS FOR BULTACO

Virginia Beach, Va.—Marty Tripes, one of the most talented young riders on the U.S. moto-cross scene, has signed to ride for Bultaco this season. Tripes has been associated with just about all of the major teams in his very short career but really shot into the national limelight with a European-beating display of riding at the Los Angeles Coliseum for the Superbowl of Moto-Cross in 1972.

With factory contracts from Yamaha, Rickman, Honda, Montesa and Can-Am already behind him, the Bultaco tie-up makes the burly youngster one of the most travelled riders in the country, at least from a contractual basis.

Jeff Smith To Tour With Can-Am Schools

Duluth, Minn.—Jeff Smith, special projects manager for Bombardier, and one of the all-time great motorcycle racing champions, will be conducting two types of riding schools, one each for moto-cross racing and enduro riding, at Can-Am dealerships across the country. Starting in Florida, Smith will follow the sun, taking his schools westward across the South and Southwest during March



and April, into California in May, and across the Midwest and into the East during the summer months.

Each one-day school consists of an audio-visual and discussion period follow-

ed by demonstration and practice riding. Registration is open to all cycle riders at participating Can-Am dealers for a nominal \$10.00 fee, which covers lunch and all expenses. Each session is limited to 25 riders on a first-come, first-served basis to assure individual attention and guidance. Student riders will furnish their own motorcycles. Smith will also conduct evening clinics specifically for Can-Am owners and mechanics.

Smith, twice 500cc World Moto-Cross Champion and ninetime British champion, also captured three ISDT gold medals and an amazing 29 Grand Prix awards during his competitive career. He has written two books and hundreds of articles on moto-cross racing and worked 21 years with the BSA company as development engineer and rider.

HUSQVARNA FACTORY TO CONTROL U.S. INTEREST

San Diego, Calif.—Bengt O. Farnstrom, President of Husqvarna, Inc. has announced the acquisition of all outstanding stock of Husqvarna United States. Last July a similar acquisition of outstanding stock of Husqvarna Motorcorp East of Lorain, Ohio was made, which, together with the recent acquisition, now paves the way for a merging of the administration,

COMPETITION HOTLINE

parts and service operation.

A total merger of the East and the West operation is planned by July 1, 1975. Several locations for a consolidated company are now under consideration and a decision is expected soon. These transactions now makes Husqvarna, Inc. the sole owner of its motorcycle marketing organization in the United States.

In making the announcement, Farnstrom stressed that sales and service to dealers and customers would continue to be under the direction of the eight district field managers. "This has proven to be the best and most direct way for communication with our dealers and their customers using Husqvarnas in competition". Parts and service centers will be maintained to service customers in the Eastern and Western United States. Motorcycle warehousing will be maintained in five key geographical locations.

While the U.S. motorcycle market was down for 1974, Farnstrom reported that Husqvarna sales in 1974 were up over 1973. Projections for 1975 show continued increases in sales and market penetration.

The U.S. racing efforts under the direction of three-time world champion Rolf Tibblin will concentrate on desert, MX, and enduro. Heikki Mikkola will defend his World Championship on the motocross tracks of Europe. American rider Brad Lackey, the highest placed U.S. rider in GP competition, will also ride a Husky in the open class.

Tiernan Elected For Second Term As AMA President

Westerville, Ohio.—Terry Tiernan, of the Yamaha International Corporation, was elected to a second one-year term as president of the American Motorcycle Association at the annual meeting of the Association's Class B members.

Also re-elected as officers were Secretary Ken Luehmann of American Honda Motor Company and Treasurer John Harley of Harley-Davidson Motor Company.

New officers to serve throughout 1975 are Vice President Bob Rudolph of Bates Industries and Assistant Treasurer Roger

Strange of Norton Triumph Incorporated.

Three members of the AMA Board of Trustees were elected by Class A membership. Ron Sloan of Thousand Oaks, California, was elected from the Western Region. Bill Baird, an incumbent trustee from Sterling, Illinois, won re-election from the Central Region. Andy Stone of Elizabethtown, Pennsylvania, was elected to his first term for the Eastern Region.

Other members of the board are Graham Kirk, Kawasaki Motors Corporation; Robert Nor Velle, Beck/Arnley Corporation; Joe Parkhurst, Cycle World Magazine; Keith Van Harte, U.S. Suzuki and John Wyckoff, Dixie International.



Race Headquarters

If you're into racing, your local Husky dealer is race headquarters. He has the 500 World Championship machine right on his sales floor in the new 360 CR. It's the exact replica of Heikki Mikkola's bike right down to the GP frame with lay down gas shocks and magnesium reed valve engine. And there's two other versions in the form of a 175 and a 250 for serious MX'ers . . . If enduros and hare scrambles are your thing, why look any further than the 250 WR. Dick Burleson won two AMA championships with this one. For '75 it has a reed valve, Mag engine and improved suspension . . . Off road racers already know of the unreal record the 400 WR has; 1st over-all in Baja, Barstow to Vegas, the Mint 400 and hundreds of other races in the southwest have been won by the "king of the desert" . . . No matter what your competition tastes are, your Husky dealer can help you with the right machine, expert technical help and a service center that's competition oriented. At the track, in the service department or on the sales floor, you can have confidence in a Husqvarna dealer.



Husqvarna

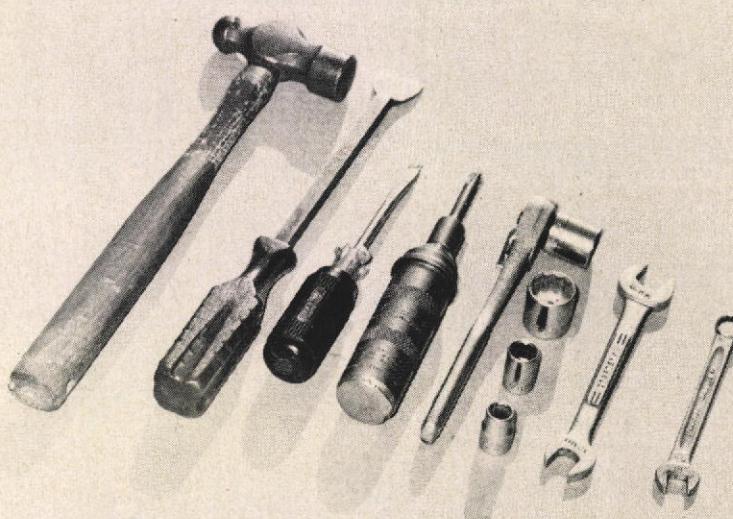
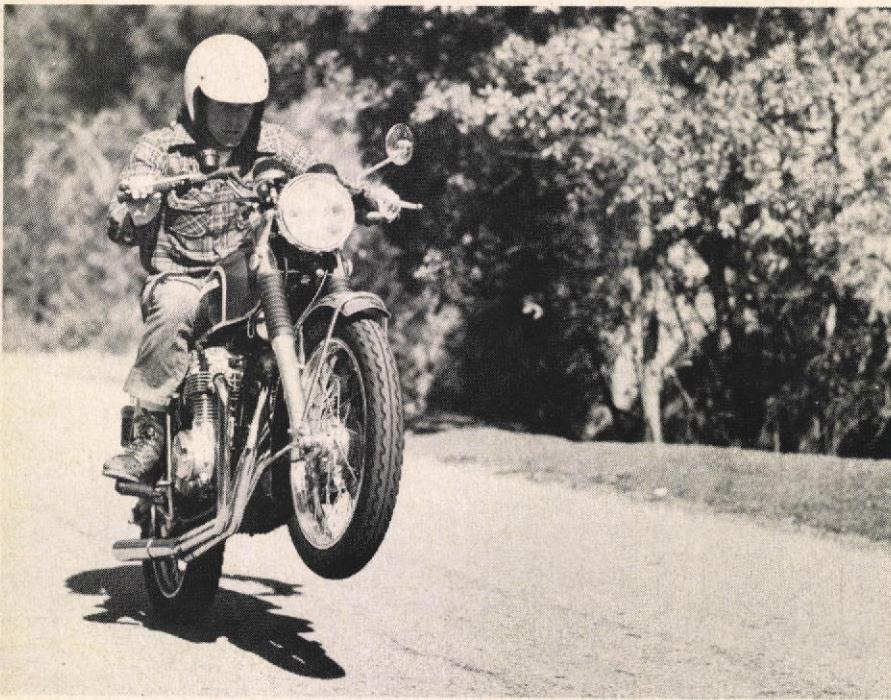
Husqvarna Motorcorp East/1906 Broadway, Lorain, Ohio 44052
Husqvarna Motorcorp West/4935 Mercury, San Diego, California 92111

IS WORTH A
1000
WORDS

LOW BUCK CLUTCH CURE FOR HONDA 500

Smoothing one of the 500s rough edges

By Rich Cox



1. Several basic tools are needed to do the job. The impact driver is a must for removing Phillips screws.

Honda's 500 is one of the smoothest and most comfortable bikes on the road. However most 500 owners have had one complaint in common; a slipping clutch after only a few thousand miles. For the person who rides moderately, this little problem is easier to ignore than fix. After all, the 500 is made for carefree cruising, not racing. But as soon as the engine oil gets hot, the clutch begins to act up and the little problem becomes a major nuisance. No matter how slowly the clutch is feathered, it still engages all at once, sending the bike off with a lurch. The hotter the temperature, the more severe the problem.

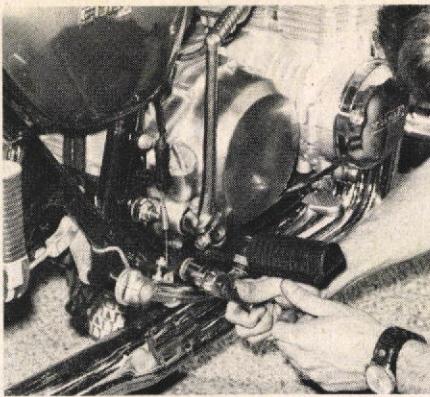
The 550 has now replaced the 500, and on top of being 50cc bigger it features an improved clutch. This raised an interesting question. Can the 550 clutch be adapted to the 500? A quick call to Honda gave us some answers. It seems the 550 clutch is bigger in diameter, which would mean the side cover is also larger. The complete actuating mechanism, including the cable, is also new. Although it's possible to switch clutches, it would involve considerable effort, not to mention the cost. It wasn't what we had in mind for an inexpensive clutch cure. We kept digging for an easier way and learned that by simply interchanging the stock clutch plates with ones from a Honda 450 the problem could be remedied. The 450 plates actually have less surface area but possess the ability to sling off oil more efficiently. The result is more friction between the plates making the clutch virtually slip-proof and silky smooth.

The best part about this project is that the 450 plates (part # 22201-283-000) can be obtained from any Honda dealer, and at a cost of \$3.04 each it's an inexpensive cure to the problem. Seven plates are required, along with a cover gasket that sells for \$1.56. The entire replacement took us less than an hour with no difficulties encountered, but we would advise you not to tackle the job unless you have an impact hammer. Without it it's almost impossible to remove the Phillips head screws on the side cover. Also several different size tips fit the impact; the #2 Phillips head being the right one to use. All other tools are standard metric size.

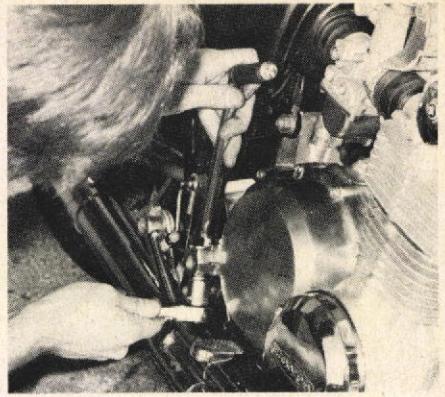
We weren't sure at first whether or not the 450 plates would really cure the problem. Only after we installed them and test rode the bike were we convinced. It's rare when something as simple as this works so good. If you don't believe us, try it yourself. •



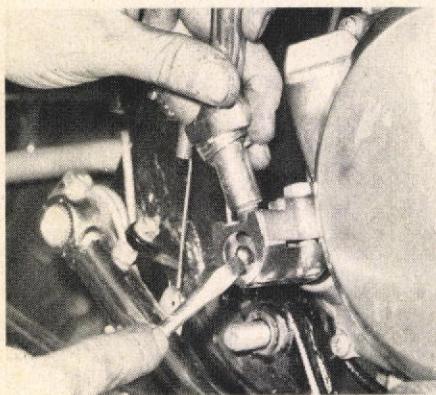
2. Don't forget to drain the oil first. A large coffee can makes a good substitute drain pan.



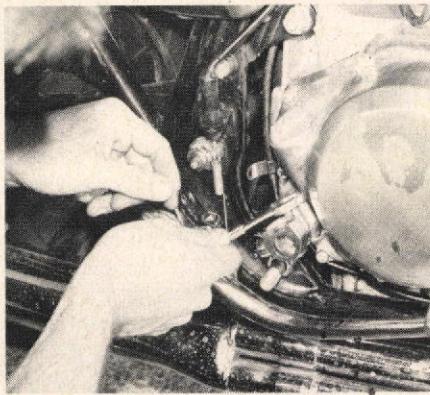
3. Right hand foot peg is removed first to allow the kick starter to slide off.



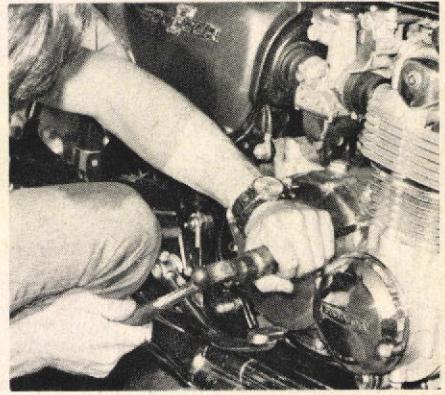
4. The starter pedal is removed from its perch in order to get to the 10mm bolt behind it more easily.



5. Be sure not to lose the spring-loaded ball bearing when pulling the pedal out. Press in with a screwdriver when reassembling.



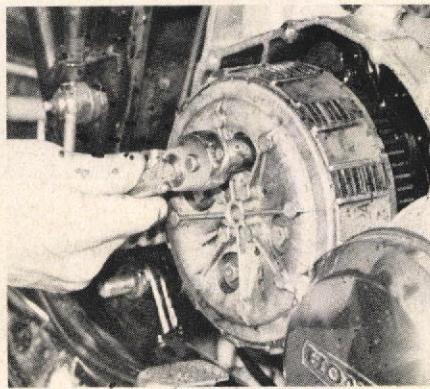
6. The remaining pedal assembly can now be removed. We found an open end wrench easier than a socket on this.



7. Don't try to take out the cover screws without an impact driver or you'll surely strip them out.



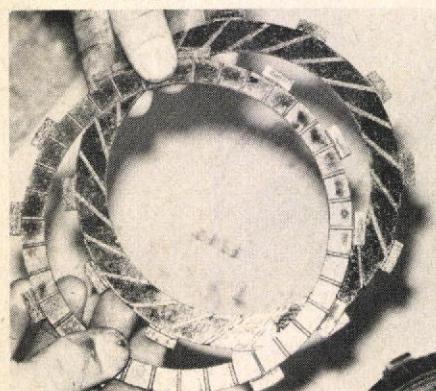
8. This cover was stuck badly so we gently wedged a thin gasket scraper between the cases to remove it.



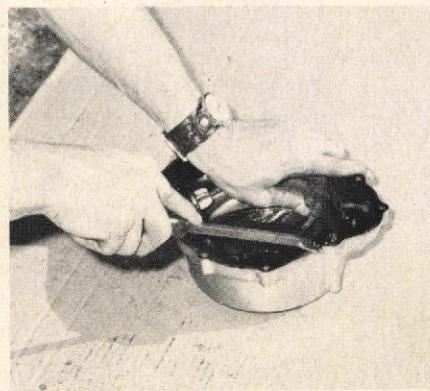
9. The four 10mm pressure plate bolts are now removed along with the plate. Bottom-out the bolts when reinstalling.



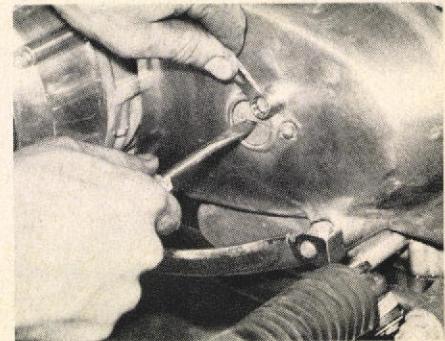
10. Both friction and clutch plates slide off as a unit. Remember the friction plate is the first to go back on.



11. Notice how much smaller the 450 friction plates are. Also the oil release grooves are straight out rather than angled.



12. If the cover gasket is torn, scrape both surfaces clean. Good ones can be used again with gasket cement.



13. Be sure to refill crankcase before making clutch adjustments. Line the two notches up and tighten down the bolt. Then adjust the clutch lever, leaving about one-eighth inch of play.



ACHIEVERS



Quiet, soft-spoken mustaschioed Hurley Wilvert is a rarity in the ranks of professional road racers. He has proven that he can handle the difficult times of privateering, a self-imposed retirement that resulted in him tuning Paul Smart's Ontario winning Kawasaki, and a stint as a factory rider for the same firm, all in a three year period. This year finds him back in the role of privateer and you may ask what makes him so rare? Simple. Hurley's outlook remains the same no matter what type of tribulations he is faced with. Always friendly and while not exactly talkative, he has time for anyone who asks him a question. This alone makes him rare in the world of professional racing.

Like many riders before him, Hurley got his start in local Southern California races and was soon eating up the competition with a variety of bikes. This led to a ride for the late Norm Reeves, a top dealer who was one of the first to get a 500cc H1R Kawasaki. Hurley took advantage of the break and was soon winning everything in sight in both production and GP classes. This in turn led to some help from Bob Hansen but private finances soon gave out and Hurley found himself on the sidelines again, at least until 1974 when he rewarded Kawasaki with a great third place at Daytona. With the cut-back of the Kawasaki racing team, Hurley is once again going it alone, with the help of tuning wizard George Vuckmanovich, but don't be surprised if the special framed Yamaha 700 of Wilvert is in the winner's circle on more than one occasion this year.

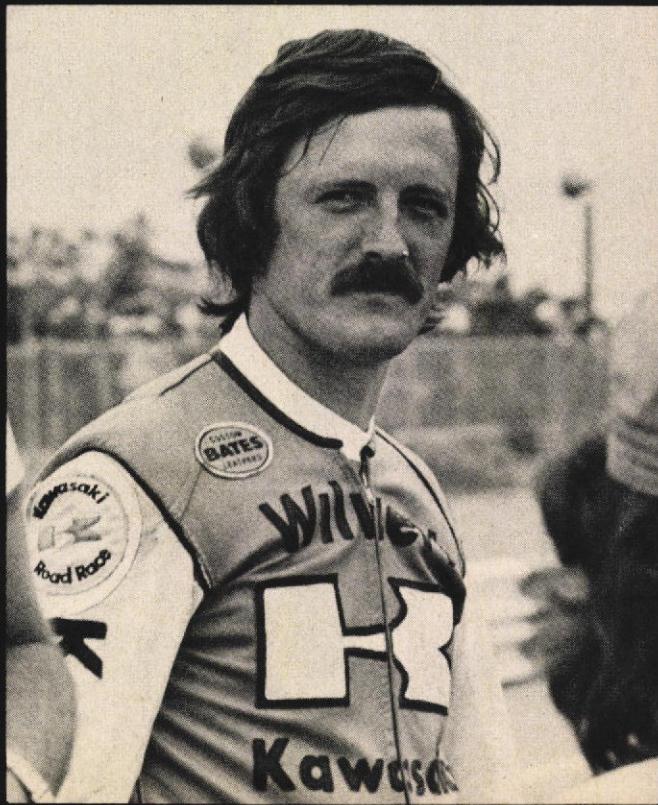
Hurley Wilvert, equally at home with a wrench or a throttle.

The name Tom Smisek may not be known to many people outside of the motorcycle industry but everyone who has read a two-wheel publication has been confronted with his work. Tom is one of the behind-the-scenes advertising people who cater for a client seeking quality material. People like Darryl Bassani and the Bel-Ray group rely on Tom Smisek Advertising Inc. to keep their name in the public eye.

Of course there are the Madison Avenue type agencies who handle the major manufacturers, but the smaller firms specializing in after-market items that form the backbone of the industry, rely on agencies who know their needs and meet them. Smisek's is at the top of the list. Splitting his time between his creative chores and sliding around the boonies, Tom is equally at home doing either.

Ably assisted by his charming wife Judie, Tom is constantly on the go with new accounts being added whenever Tom and Judie think that they can offer the top line service that the agency is becoming famous for. With everything at one location, including all photo and production capabilities, Smisek Advertising is one of the most self-sufficient agencies to be found, regardless of size.

Tom Smisek, and ad exec who is equally at home on a bike.



The Windjammer III

All you need to know about fairings.

The Windjammer III is the proud successor to the fairings that created a whole new concept in motorcycle riding comfort.

The beauty of the Windjammer III is a direct result of the function it is designed to perform—protecting you from the wind. And it does this better than any other fairing made. Simply stated, it's beautiful because it is the very best there is.

When equipped with a Windjammer III and our remarkable new aerodynamically engineered lowers (as pictured at left) your motorcycle becomes a truly year-round touring machine. You ride safer in cold weather because you ride warmer.

If you're serious about motorcycling and proud of your machine, the Windjammer III is the only fairing you need consider.

To see why the fairing that costs twice as much accounts for one out of three of all fairings sold, get the Vetter Windjammer III story and full information on Vetter options and accessories at your authorized Vetter dealer. Or contact Vetter Fairing Company, Dept. M, Rantoul, Illinois 61866. Phone (217) 893-9300.



The Windjammer III shown without optional lowers.



Lowers can be fitted to most earlier model Windjammers. Check with your dealer. Other options include "Class A" side lamps, tonneau covers (for built-in storage compartments), snap vents (for better ventilation in summer), Carello Halogen headlight, new high-visibility wrap-around reflective striping, new Vetter/Hayden oil cooler and new cigarette lighter.

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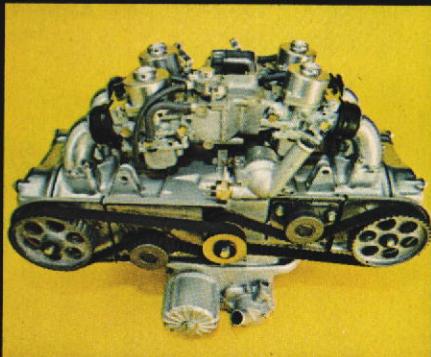
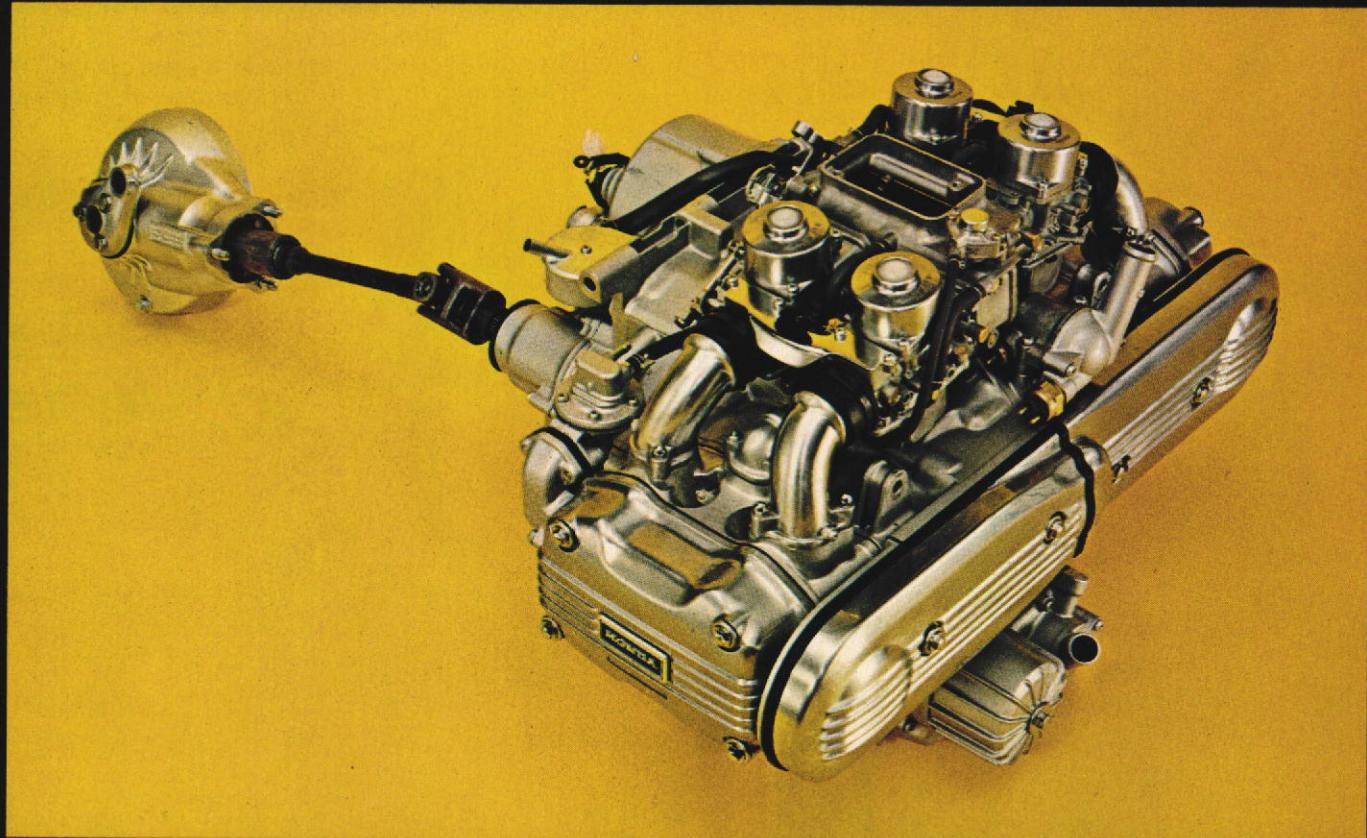




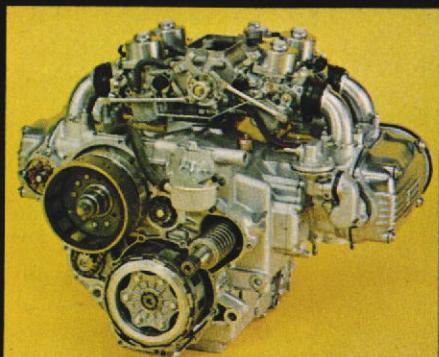
GOLD WING IN PROFILE

Honda's 1000cc flat four wears a bulletproof kimono. Complex? Yup. But don't sweat it; your chances of breaking into it are about on a par with Fort Knox!

by **BOB GREENE**



Staggered cylinder banks, necessitated by all-male-rod crankshaft, are reflected in offset cam belt drives.



Out back: alternator/torque reactor, clutch and output drive shock spring. Off cams: ignition points, fuel pump.

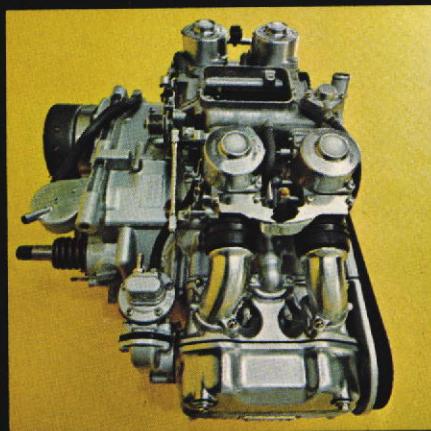
photography Pat Bröller

Size, weight and power command respect—symbols of leadership. Never the biggest, heaviest nor most powerful, Honda nevertheless commanded unprecedented respect and leadership world-wide with their 750cc Four. For no other motorcycle before it had moved the crossbar so high on the standards of durability: 100,000 miles without so much as a valve job. For the first time in the history of two wheels a screaming, air-cooled engine challenged the thick-skinned automotive powerplant ensconced in its water-cooled jacket and shielded from the cruelties of bone-jarring torque through the hydraulic cushion of an automatic

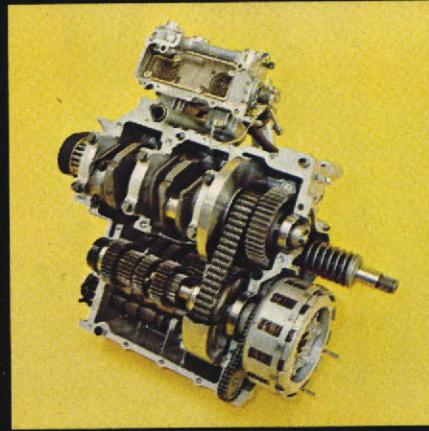
transmission. Why the parallel? What bearing has it on our introduction of Honda's again all-new GL-1000 flat four? Because the Gold Wing represents a change in conceptual thinking, a break from the simple short-fused shaker of a passing era. First Suzuki with their Rotary, and now Honda, resign to the fact that the price of longevity is attention to the smallest needs of each support system within an engine: simplicity is no longer the virtue that it once was, when it stands in the path of a 100,000-mile bogey.

At 647 pounds wet, the Wing is undoubtedly the heaviest 61-cubic-inch motorcycle ever produced; its engine

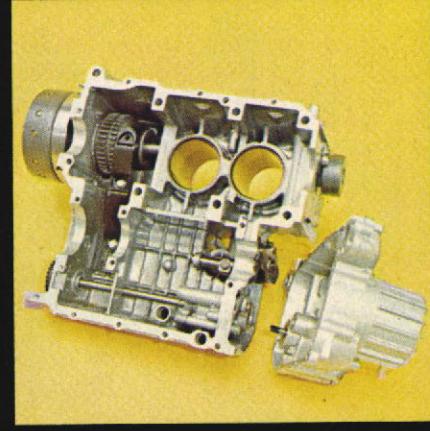
alone scales about 226 pounds dry. It is sophisticated, frighteningly so at first, with many systems and parts that require hours of fondling and familiarization to fully comprehend. But with comprehension comes the realization that not only is each system a rugged entity, but each is pampered and protected from wear and abuse by every means available, from super-lubrication to exotic shock devices that contribute to its reliability . . . and complexity. Finally it sinks in: this thing is built to live. Points, plugs and oil changes will probably mark the extent of their familiarity, with an occasional cam belt adjustment. Suddenly the fact that it takes



Not as wide as it looks, Gold Wing is an inch shorter and 3½ inches narrower than the 900cc BMW twin!



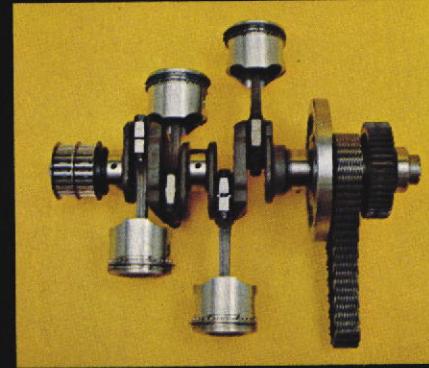
Hy-Vo primary chain drive to trans mainshaft and clutch, and the smaller double-row roller chain to oil pumps.



Left half of case showing shifter fork shaft and outside linkage above the water and oil pumps shaft.



General layout of crank's two main drives plus two sub-drives off them. Torque reactor assembly is at top.



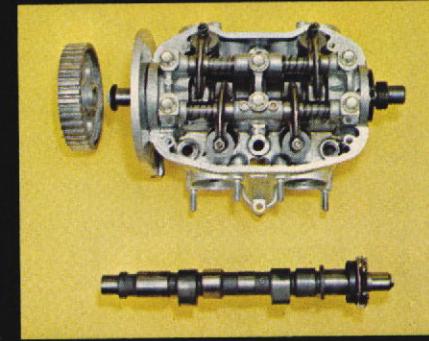
When the front pair of rods come in, the back set go out; perfect balance. Kickstarter attaches to crank end.



Alternator rotor, starter sprag clutch and anti-lash double gearset comprise the torque reactor assembly.



Big valves—37mm intakes, 32mm exhausts—and interchangeable pistons having double recess, no pin offset.



Single overhead cam, running directly in head, with conventional rocker setup. Cam lobes ride in oil trough.



Spring and cam-cushioned output drive and U-jointed driveshaft, all rugged enough to have been made in Milwaukee.



GOLD WING IN PROFILE

one man a little over an hour to remove the engine from the chassis becomes a moot point. How often do you field-strip your wrist watch?

Now let's scoot over to American Honda's Service Training School and wrench our way inside this water-cooled opposed four with five-speed gearset and shaft drive. Heart of the engine is the three-main-bearing crankshaft with two pairs of 180° opposed throws, again 180° out of phase with each other. Or look at it this way: when the two front pistons come in together, the two rear pistons go out together. Imagine two BMW twins end to end but 180° out of sync. The crank turns on plain bearings, one on each end of the crank and one in the middle, between the two pair of throws. There is a fourth bearing, a ball, on the rear extremity of the crank, but it is outboard of the flywheel and several accessories that are driven off the crank and therefore is considered an accessory support bearing rather than a main bearing. Foremost of these drive systems is the Hy-Vo link belt primary drive chain to the mainshaft of the five-speed gearset in line with and directly below the crankshaft.

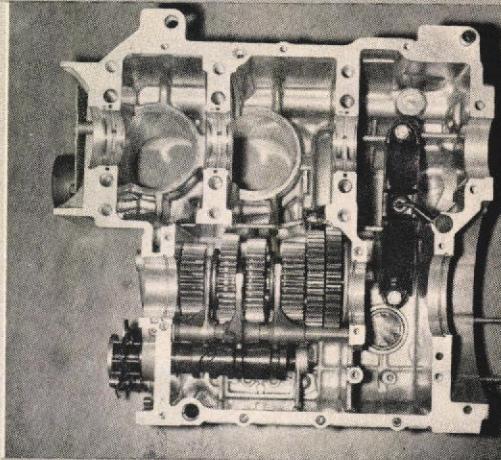
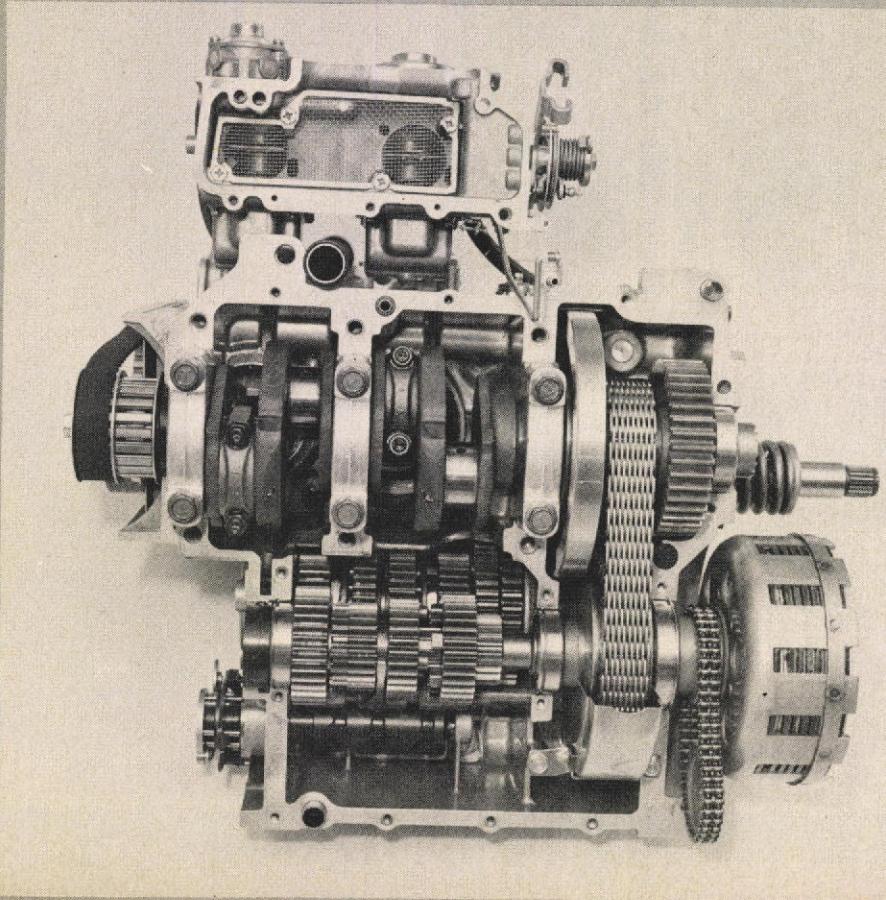
Right here's the key to the Honda 1000. Knocking the tranny off the end of the engine and stuffing it up under the crankshaft not only made the big flat four concept practical but allowed it to be dimensionally smaller than the BMW 900 twin! Whereas the Bee Emm is 23 inches long, from front cover to rear clutch arm protrusion, the Honda is 22 inches. And from rocker cover to rocker cover, the Bavarian double is 29 inches wide while the Japanese quad is a mere 25½ inches. So the Honda is 1 inch shorter and 3½ inches narrower than the BMW! Ironically, this is one of the major reasons BMW gave for not building a four: "It would be too long."

There are potential penalties for kicking the gears downstairs: transmission and clutch service time, and the possibility of oil contamination from the clutch. Since the gears are housed in the vertically-split engine case, gear or bearing or shaft replacement—including a bent shifter fork—necessitates removing the engine from the frame and splitting the case. And although the case need not be split to work on the clutch, the engine should be dropped to get at the plates. Another unhappy thought is the prospect of lowering the engine from the frame to clean the oil sump screen. Yes, it's true. But most cruel is their placement of the neutral light sending switch along the lower right side of the case; should this "two-bit" item expire, it is also neces-

sary to drop the engine since the switch is trapped between crankcase and frame. Hopefully the latter will be modified before the production line gets up to speed. And since the gears, primary drive and clutch all share a common oil supply, friction particles shed by the clutch must be digested by the clutch's trochoidal oil pump before reaching the aforementioned sump screen and eventually the main trochoidal oil pump and filter. Should the clutch really come unstrung—through neglect or abuse—the debris could wad up the rear pump before the filter ever got a shot at it.

The Wing's crankshaft is a busy sonuvagun. Off its nose runs a double pulley driving two toothed Gilmer belts that power each bank's single overhead cam—thank heaven they got off that whirring cam chain kick. Reinforced with steel wire, the belt, tensioned by spring-loaded idler wheels at mid-point, should prove extremely durable, with minimal service and noise. Access to the belts and tensioners is direct and immediate with removal of either outer front cover.

Off the back of the crank are two power trains, the aforementioned Hy-Vo primary chain drive to the mainshaft below and, immediately in back of this sprocket, the huge straight-cut gear drive to the torque reactor—we'll get into this gizmo soon enough. And off each of these shafts—the mainshaft and the reactor shaft—is still another

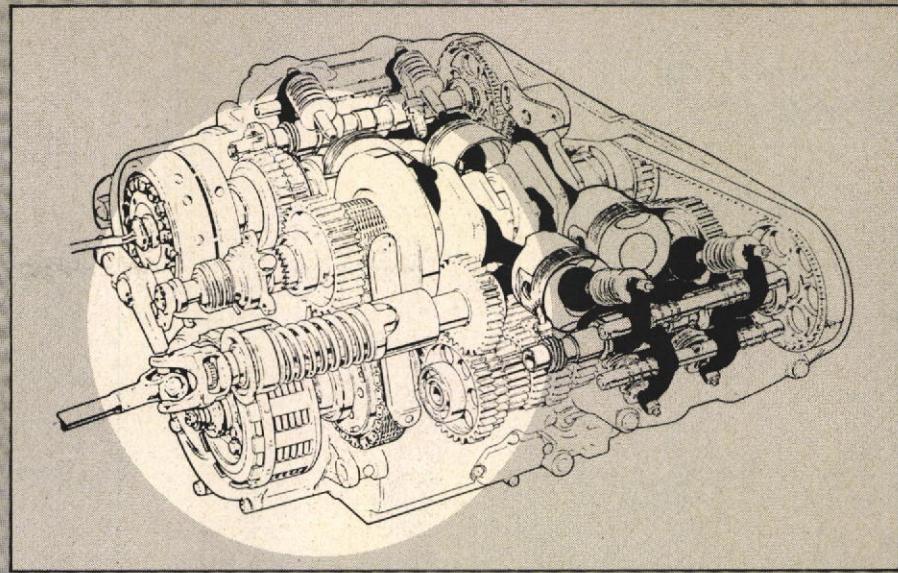


ABOVE—Gutted right-side case hints that right-side pistons have to come out the top because of crank main web offset. Black strap at right is guide for Hy-Vo primary chain.

LEFT—Right side again, but with Hy-Vo primary and clutch basket in place on mainshaft. Small double-row chain is take-off to clutch oil pump.

power drive system. A small double-row sprocket and chain on the main-shaft, between the Hy-Vo primary chain and the clutch which is also attached to the end of the main-shaft, drives the oil pumps shaft. While a single-row sprocket and chain on the torque reactor shaft ties in with the starter motor.

So actually we have two drive assemblies off the back of the crank, each with its own sub-drive. First let's get into the Hy-Vo chain-driven main-shaft and its sub-drive to the oil pumps. Actually there are two oil pumps and a water pump all driven off that same long, skinny shaft. The rear oil pump has only one function, to keep the clutch, which is a wet multi-plate type outside the crankcase proper but lubricated by gravity feed through an oilway down the main-shaft, from drowning in oil. For the clutch is walled-off from the crankcase oil sump cavity; otherwise it would be almost half submerged in oil. So the rear pump is located back in the clutch room, and its sole function is to keep that chamber bailed out by heisting oil thrown off the clutch back over the wall and into the main crankcase sump just forward of the clutch cavity. The shaft on which the clutch oil pump rides, however, extends all the way forward to the front of the engine case where it powers the main oil pump and, immediately ahead of it, the water pump. O-rings and seals separating these back-to-back water and oil

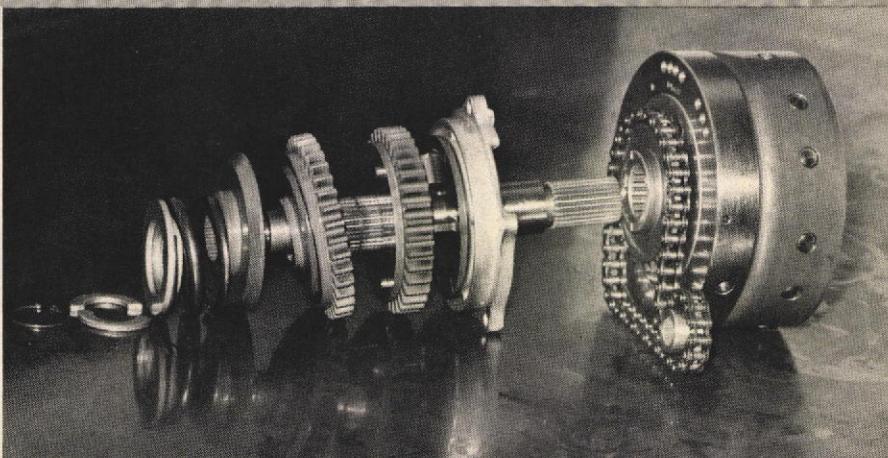
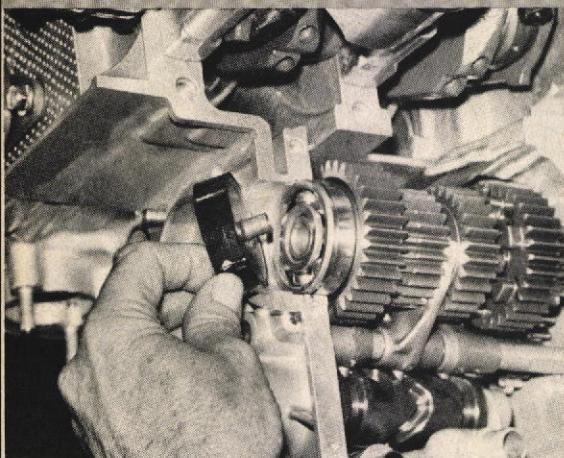


The whole enchilada. Power off the tail of the crankshaft drives torque reactor split gear (top) while Hy-Vo chain ahead of reactor drive gear pulls the main-shaft with clutch attached. Meanwhile (on near side) counter shaft gear powers output drive gear with ensuing spring-loaded cam shock softening blow to U-joint, driveshaft.

pumps keep water from getting into the oil and vice versa, each pump being provided with a weep hole to atmosphere, between their individual separating seals, to not only prevent cross-contamination but serve as visual warning in the advent of leakage at either seal. A drop of oil beneath the left front corner of the engine indicates a worn oil pump seal; a drop of water points the finger at the water pump. Of

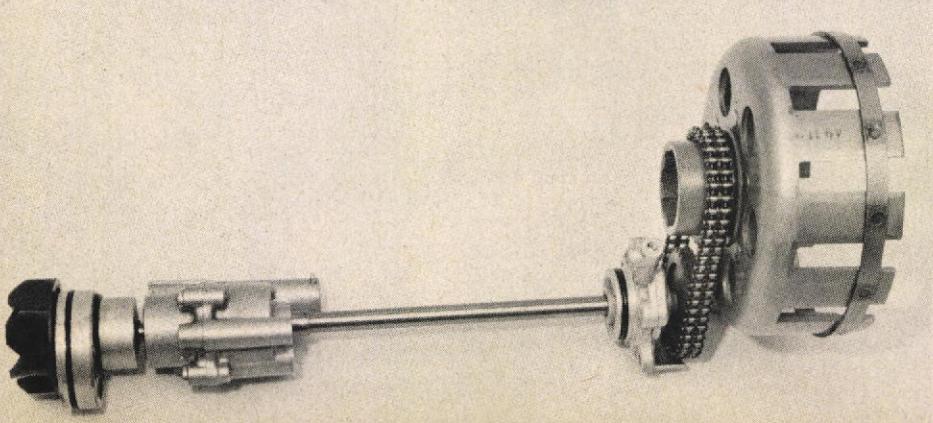
these two, only the water pump can be removed without getting into the engine.

Realizing that your mind can absorb only what your butt can endure, let's take five here. We'll move on to the other rear sub-drive, the mysterious, mind-warping torque reactor assembly. We'll warm up to it first with a little technical gibberish on the why's and wherefore's; then grit your teeth and grab a big handful, but hang in there



ABOVE LEFT—This oil seal on end of main-shaft (front of right case) picks up oil gravitating from above, routes it through hollow gear shaft. Engine has wet sump, single oil source.

ABOVE—Meet the gizmo that almost sent me to the funny farm, the torque reactor. On its splined tail is chain to starter motor, sprag clutch and electrical alternator. Simple, huh?



LEFT—Main-shaft-driven oil and water pumps shaft extends full length of engine in left case. From left to right: water pump, main oil pump and rear oil pump for clutch housing.



GOLD WING IN PROFILE

because it's a fascinating chunk of machinery and I know you can handle it. I finally did. Understanding it is one thing; putting it in print's something else! Let's slowly sneak up on it.

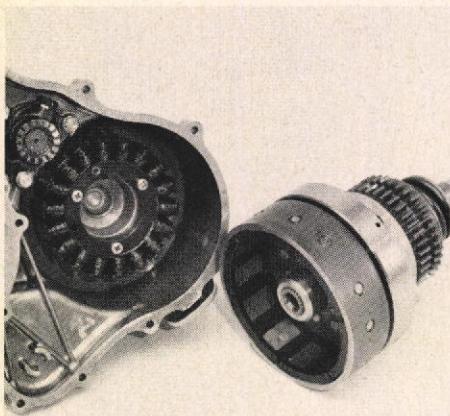
The torque reactor is situated above and to the left of the mainshaft/clutch centerline when viewed from the back of the engine. All in God's world it is a very sophisticated 16½-pound weight that spins full time in the opposite direction of the crankshaft for the purpose of counteracting the precessional force of the fore and aft crankshaft. BMW and Guzzi don't have it, and can barely get by without it because they are slower accelerating, smaller displacement engines. But the quick-winding Wing needs it to keep from doing a barrel roll when the revs are called up in a hurry. Now this torque reactor, unlike those out-of-balance omniphase whirlygigs, is just a round mass and in perfect balance—no self-destructing jumpin' jive. Being gear-driven off the rear of the crank, it naturally rotates in the opposite direction from the crank, so that when rotational force of the crank tends to twist the engine to the left—viewed from the rear—this 16½ pound mass acts to cancel precession.

The torque reactor assembly rides on its own little ball bearing shaft and is made up of several driving and cushioning components, none of which is just dumb weight. This highly articulated lump includes the driven gear, the driven sprocket from the electric starter and attendant disengaging sprag clutch, and the alternator rotor. When the electric starter is activated, the starter's small single-row chain turns the torque reactor assembly shaft which in turn spins the crankshaft through its geared relationship. When the engine fires, and crank speed rises above starter motor speed, the sprag clutch kicks out and disengages the starter, allowing this gear/sprag/alternator mass that comprises the torque reactor assembly to turn against the engine and damp its accelerative torque impulses. Easy now, here it comes. Get a hold of yourself!

Such a heavy counter-rotating weight could cause problems—such as upon rapidly closing the throttle—if it were not cushioned. You know... like bust. To preclude this, the driven gear on the torque reactor shaft is actually two gears that work like one except that they are able to offset slightly from one another under rapid acceleration or deceleration to eliminate backlash. This spring-loaded, lash-compensating split gear drives the reactor shaft indirectly through neoprene cushions between the split gears—neither of which is splined to the shaft and is therefore

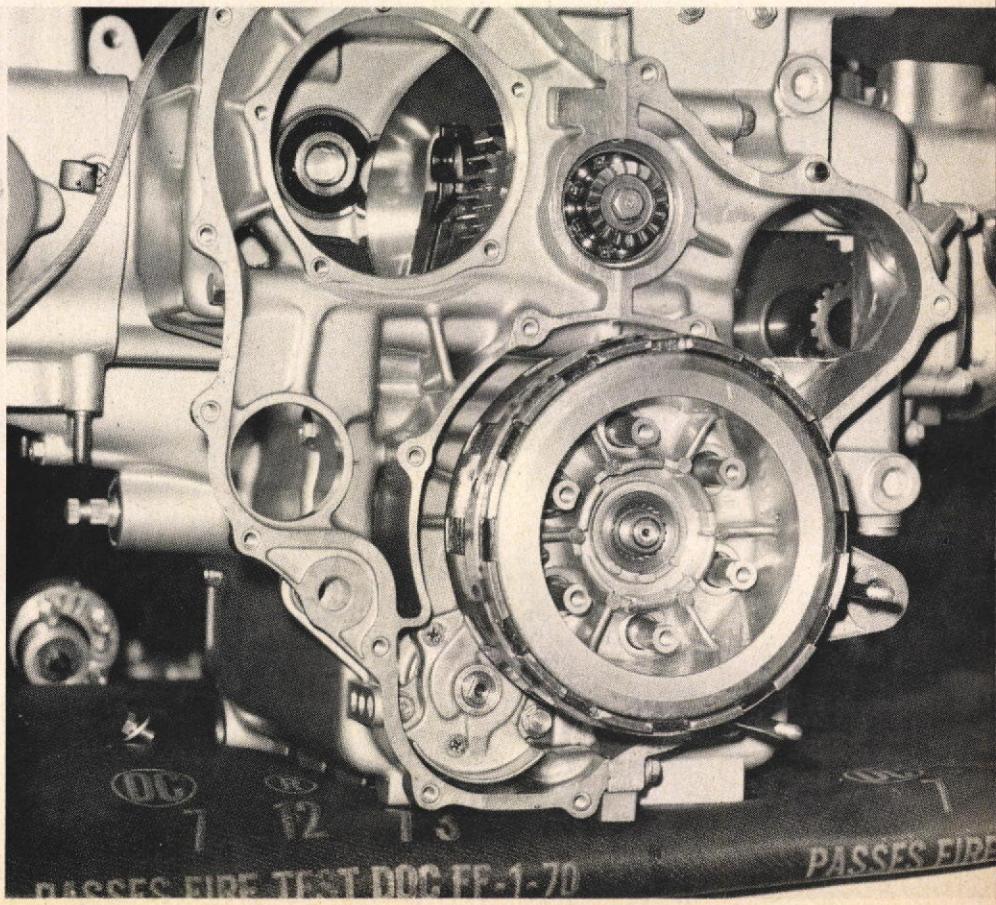
basically free to turn—and engaging plates which are splined to the shaft. Each of the two gears is cush-hub-connected to its respective end plate. The front gear end plate is splined to the shaft; the rear gear end plate is only an interference fit on the shaft and able to move under extreme force. A pin and groove limiter plate between the gears, and engaging each one, is also splined to the shaft, allowing only limited movement between the two. Sandwiching the whole cushioned gear assembly together is a whopper of a coil spring on the nose of the shaft that, while permitting cushioned movement against the stationary plates, tends to resist it as well due to its powerful compression. Upshot of the whole thing is that under acceleration or deceleration the front half of the split gear lags behind the rear half, bearing on the opposing face of the adjacent tooth of the crankshaft drive gear being engaged. Actually the function of the limiter pins in the splined plate between the gears is a precaution in case the neoprene blocks in the gears should go away, for the slots in the gears in which the pins travel allow only a small amount of movement. Here's your finisher's pin, baby; you've just cleaned the roughest section of the course!

Meanwhile, over in the right wing, crankshaft output, multiplied through primary reduction, mainshaft and countershaft, is taken off the rear of the



ABOVE—Alternator rotor on end of torque reactor nests in alternator housing that also contains kickstarter engagement dog connector to crankshaft.

RIGHT—All of which bolts to this back side of engine. Large opening in upper left of this photo accepts torque reactor gear which engages big crankshaft gear just visible in hole. Electric starter motor sticks its head through smaller hole at lower left, while right side opening allows U-joint to reach in and grab output shaft.



countershaft by the output drive gear that rides on a roller bearing shaft of its own. Splined to the output gear tail-shaft is a spring-loaded-cam shock absorber between output shaft and driveshaft U-joint. And again splined to the rear of the U-joint, the driveshaft completes the power play to the ring and pinion rear end. Tail of the driveshaft is coupled to the pinion gear shaft through a splined slip-joint sleeve to accomodate the changing relationship between pinion gear shaft and driveshaft when the rear wheel is traveling through its ever-changing arc. This short pinion gear shaft is carried on Timkin tapered roller bearings and gets its lubrication from Hypoid oil in the rear end. No other lube accomodations are provided for or required for the driveshaft; only the rear end. The U-joint is grease-packed at the factory and its life span is yet to be announced. I get the one in my Ford re-packed about every 20,000 miles.

In all there are four shock absorber systems in the Wing's powertrain: a cush-hub on the transmission main-shaft sprocket of the Hy-Vo primary chain, the cush-hub in the torque reactor, the spring-loaded cam ahead of the driveshaft U-joint and six rubber donuts between the drive hub pins and the rear wheel hub. Their purpose is to eliminate harsh metal-to-metal impacts and extend component life. By contrast, BMW employs only one such de-

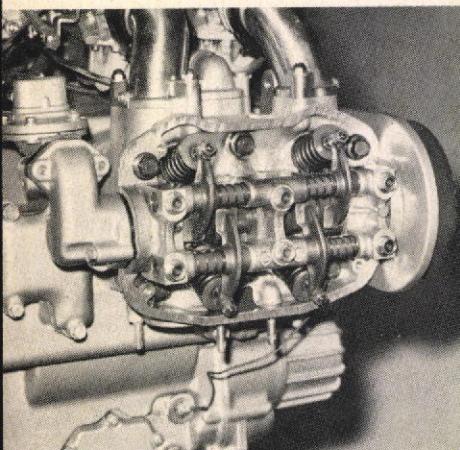
vice, a spring-loaded cam on the gearbox input shaft.

Even the Wing's camshafts have a little power struggle going, for in addition to operating their valves via conventional rocker arms and adjuster nuts, a dual-point ignition breaker operates off the back of the left cam while an automotive-type diaphragm fuel pump is jiggled off the right cam's tail. A fuel pump is necessary since approximately one-third of the fuel carried in the remote five-gallon tank underneath the saddle is below the carburetor level. Yes, if the fuel pump takes a dive, you can ride forever if you can keep the tank over a third full. *But get this:* to preclude even a possibility of galling a cam lobe or rocker shoe upon firing up the engine after prolonged sitting, a trough is formed between the rocker stand and the head that retains a small body of oil at all times. The cam lobes dip into this standing lubricant every turn, even from a cold start-up. Since many Honda owners have a fetish of redlining the engine after reveille each morning, this technical safeguard is nothing short of sheer genius.

And since we already have our hands in the oil, let's do a quick make on the oil system before moving on. From the front-mounted trochoid oil pump, you've got full pressure to the cartridge-type filter and by-pass, then up to the rocker shafts, Hy-Vo primary, crank bearings and rod bearings. Full

pressure to the hollow rocker arm shafts ensures ample oil to rocker shaft bearings, while small holes drilled in each exposed section of rocker shaft also direct a constant spray of oil onto the tip of the opposite rocker where it contacts the valve. This, plus the aforementioned dip bath for the cam lobes, affords perfect lubrication. The rod journals are drilled to match up with corresponding drillways in the left two rods only. Reason? Throw-off oil from the journals, fattened by a geyser of oil coming off the transmission gears directly below, is spontaneously flung into the right bank of cylinders and serves to cushion piston-to-wall contact there. But this gusher is spent before the crank can whip it over to the left bank and thus the need for the squirter arrangement in the base of the left set of rods to oil these cylinder walls. Oil from the camshaft troughs falls back into the sump. Some pressure from the mains is diverted from the end seals and gravitates to the hollow mainshaft and countershaft bores, lubricating gears, bearings and clutch before returning to the 3.8-quart wet sump of 10-W 40 oil. Crankcase vapors are collected in an outside separator can and recirculated through the carb manifold. The single oil supply filler is at the right rear of the engine, with a Kawasaki Z-style oil viewing window low on the right case.

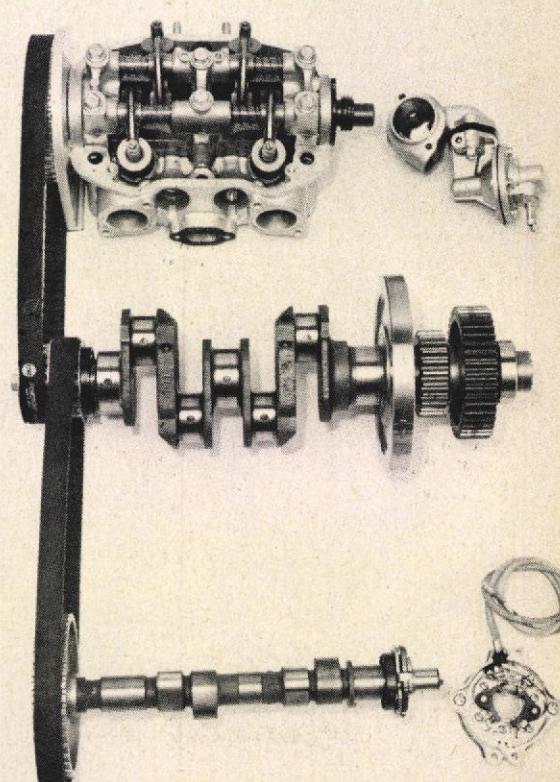
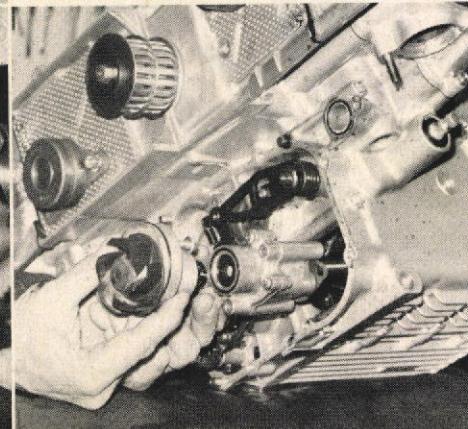
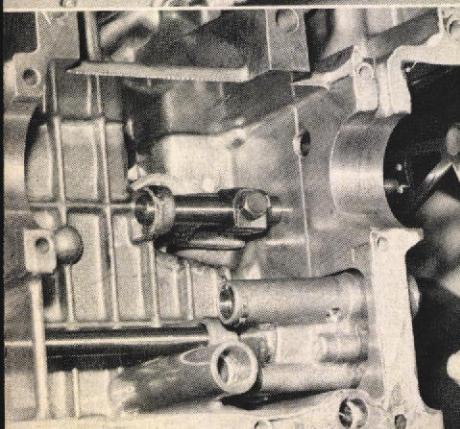
Supplementing the oil's cooling characteristics is a water coolant system



LEFT—The right bank, quickly exposed for simple valve adjustment. Underneath camshaft is trough through which cam lobes are drug each revolution. Even after sitting for a year, they would get instant oil on fire-up. Neutral indicator sending unit and oil sump screen escape door are seen at bottom, both locked in by frame rail.

BELOW LEFT—Inside and looking toward front of left case: footshift fork actuates shaft which moves linkage visible at right. Note pumps shaft.

BELOW—Shifter shaft and linkage are again visible from outside, along with hand-held water pump and main oil pump positioned just behind it.



Starting to get the lay of the land? Cam drive is isolated, with each shaft's respective dependents, fuel pump and ignition breaker plate.



GOLD WING IN PROFILE

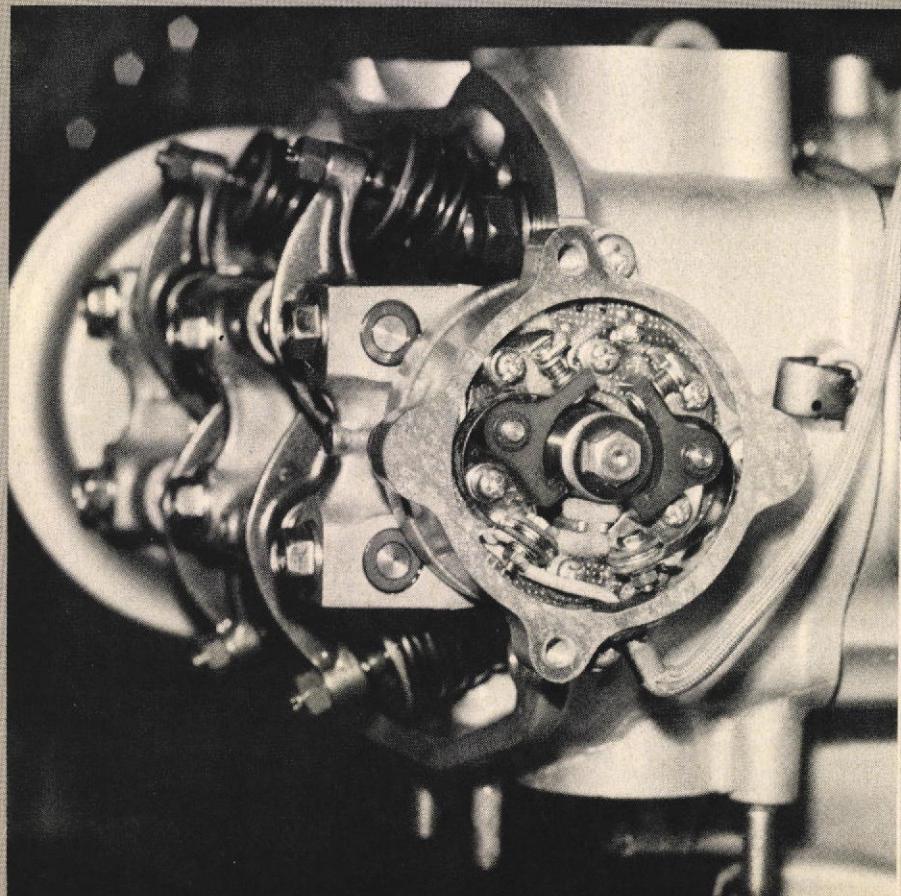
using a 50/50 water and anti-freeze mix of 3.4 quarts circulated by the water pump through engine, radiator and expansion tank. An automatic radiator fan cuts in at 210° should it become necessary. Coolant is directed first to the cylinder jackets, then the heads and through exterior plumbing to the thermostat housing, temperature sending unit and fan thermostat before returning to the radiator. Distilled water is recommended because of the high erosion factor of the aluminum heads when subjected to hard water. Several freeze plugs are built into the block. The engine is said to run extremely cool under all circumstances, with 180° thermostat and 12-pound pressure cap, seldom calling the fan into action.

Equally sophisticated is the 87 octane fuel system complete with in-line filter and "new" British-style tank pet-cocks that comply with Government standards. The worm-drive jiggler pump off the right cam tail feeds four 32mm constant velocity Keihin carbs with 2½ pounds pressure, through passages in the air chamber box enroute to the jets. That strange device plumbed into the right front carb is an

air cut valve, a vacuum-operated diaphragm control that immediately reduces air flow to the carburetors when the throttle is closed, thus enriching the otherwise overly lean mix and ensuring combustion in the cylinder rather than in the muffler. Obviously excessive backfiring from the prototype engines occasioned the fitting of this device, which is a bit of a mystery that would appear to reflect on carburetor design since other motorcycles, including the BMW, get along perfectly well without it. Carburetor butterflies for each bank are mounted on a common shaft linked to a central reel with positive dual-cable control to the handlebar throttle. Vacuum gauge adaptors are found at the base of each intake manifold, and Honda Tech School instructors report that the most efficient way to set idle mixture adjustment is with an infra-red exhaust analyzer. And don't worry about running out of gas; an automotive-type gas gauge shows the amount of remaining fuel at all times. Located beneath the saddle, in the top of the fuel tank, the fuel gauge sending unit can be removed and readjusted to read any way you like it, realistically or otherwise. Can you imagine having a fuel gauge that's spot-on?

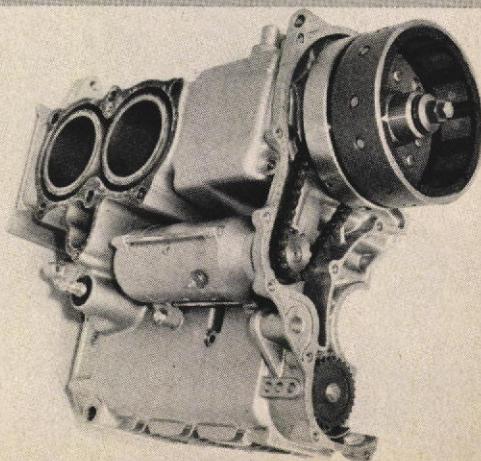
You'll get a charge out of the trick electrics, with fail-safe backup system on headlight and taillight circuits. If low beam blows, high beam automatically comes on at reduced brilliance; ditto

with the taillight. And if the high beam or stoplight conks out, the other filament brightens up until a replacement arrives. Lights go on automatically with the ignition, momentarily interrupted only when the starter is activated. Meanwhile an idiot light on the dash frantically blinks to catch your attention. It's a 12-volt system with an 18-ampere-hour, 12-volt battery the size of an elephant's foot. The alternator riding on the end of the torque reactor—you remember that, don't you?—has a permanent magnet rotor instead of an excited field like previous Honda Fours. Reason being that a constant electrical load is required on behalf of the torque reactor assembly. With an excited field the load would vary when the battery became fully charged and erratic loading due to fluctuating electrical drag on the torque reactor would disturb its optimum performance, effectively overweighting or lightening the unit, so to speak. Voltage regulation is handled by a solid-state finned aluminum current limiter. When the battery is fully charged and voltage gets up to 14.7, one leg of the Y-wound, 18-pole stator is shunted directly to ground via the limiter, decreasing the charge rate. Timing marks for timing the engine are found on the flywheel, visible through a removable plug atop the left rear case. Firing order is: right front, right rear, left front, left rear, or #1, #3, #2, #4, providing a firing impulse every half revolu-



LEFT—Back of left camshaft powers ignition breaker points, quickly accessible and easy to work on.

BELOW—Left case. Note there are no separate cylinders; they're in block. Shown are shift lever shaft up front and lower sprocket for oil pumps shaft.



tion of the crankshaft. As already mentioned, the engine is equipped with a sure-fire electric starter, but just in case, Honda's packed an old kick pedal in your tool box; when the day comes, just whip it out and pop it onto the end of the crankshaft... and leap. Better yet, hang it on your garage wall and practice up on your run-and-bump technique; it's a lot quicker and you'll probably knock about three pounds off overall weight. Either way works. Headquarters for much of this electrical jazz—resistor unit, current limiter, fuses, winker relay assembly, starter safety interlock and reserve lighting unit—is up in the left sidepanel of the make-believe gas tank. Know something, ol' buddy? You've just about picked my brain clean of engine. Time's come to move into the chassis, then take this hairy dude for a spin.

The Gold Wing is a big mammoth. At 91 inches overall length and 60½ inches wheelbase, it is about 2½ inches longer on wheelbase and 5 longer on overall length than the BMW. To even better enable you to orient the Wing, it is just one inch short of Harley-Davidson's giant Electra-Glide, both in wheelbase and overall length, and a couple inches longer than their 1000cc Sportster. The Wing's engine alone is exactly the same weight as a Honda MT-125cc Enduro with a full tank of gas. Aside from its impressive stature, the GL-1000 brings you triple hydraulic disc brakes incorporating

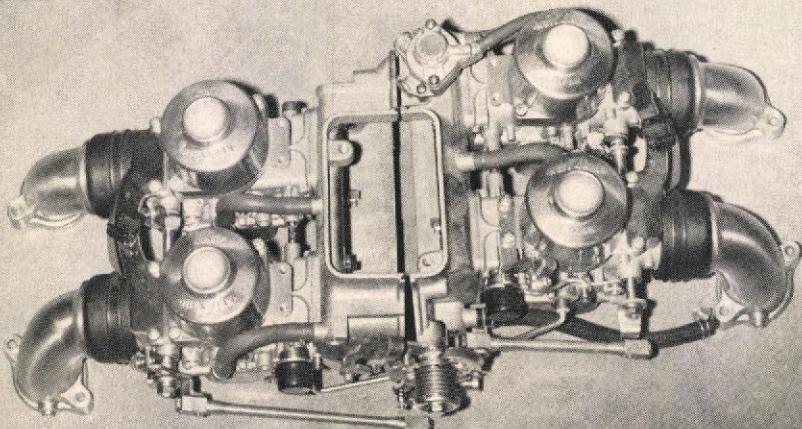
self-aligning single-piston front and double-piston rear, with visual wear indicators. Equally competent are special hollow-rimmed aluminum wheels for increased strength, with oversize tires of 3.50x19 front and 4.50x17 rear.

Pretty average in most respects, the frame does have a couple idiosyncrasies, such as the removable left frame rail that frees the engine to climb out of its cage after unbolting. And the rear of the bike must either be raised 18 inches off the deck or parked with its tail overhanging a precipice of equal height to provide clearance for removal of the 38-pound, U-shaped, interconnected exhaust system. The fact that the mufflers are connected, ahead of the rear wheel, prevents normal removal. The frame is decent looking and the front downtubes that extend back under the engine are of extra large diameter—32mm as compared to the 750's 28.5mm. And those kinks in the bends of the front downtubes we saw in the Las Vegas show models have been ironed out. Fork head caster of 63 degrees provides 4½ inches of trail. I was surprised at the ease with which the GL could be heisted up on its centerstand, and again with the realization that no Zerk fittings are provided, hinting of Honda's resignation to poor maintenance in the hands of the average owner. Factory sealed units seem to be the trend they are taking. This, opposed to BMW's liberal use of Zerk fittings, and tapered Timkin bearings in

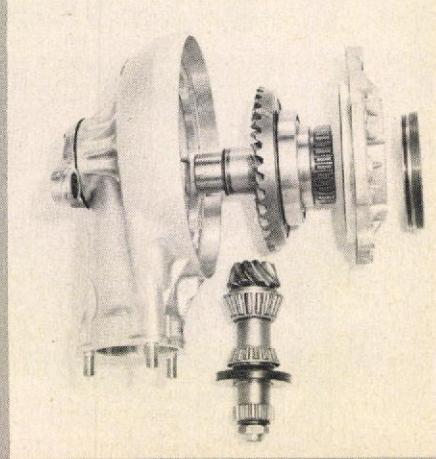
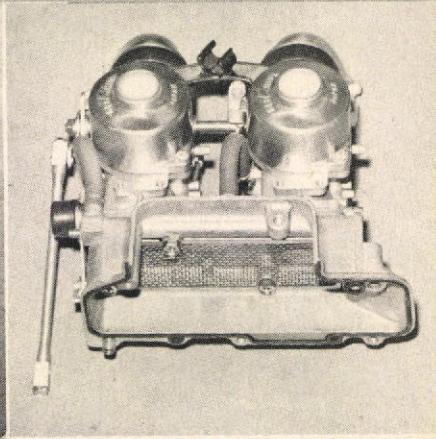
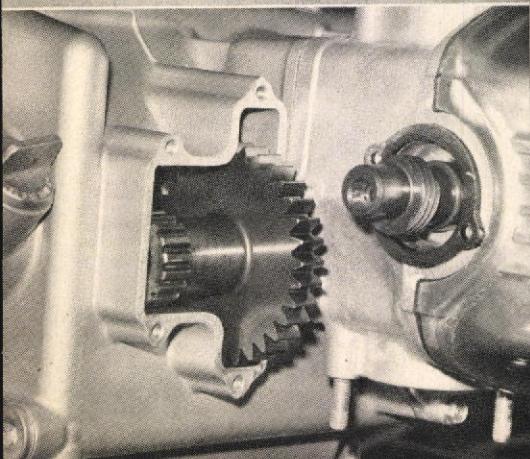
the fork crowns and swing arm compared to Honda's needle bearings on the swing arm pivot bolts and less sophisticated ball bearing fork crowns.

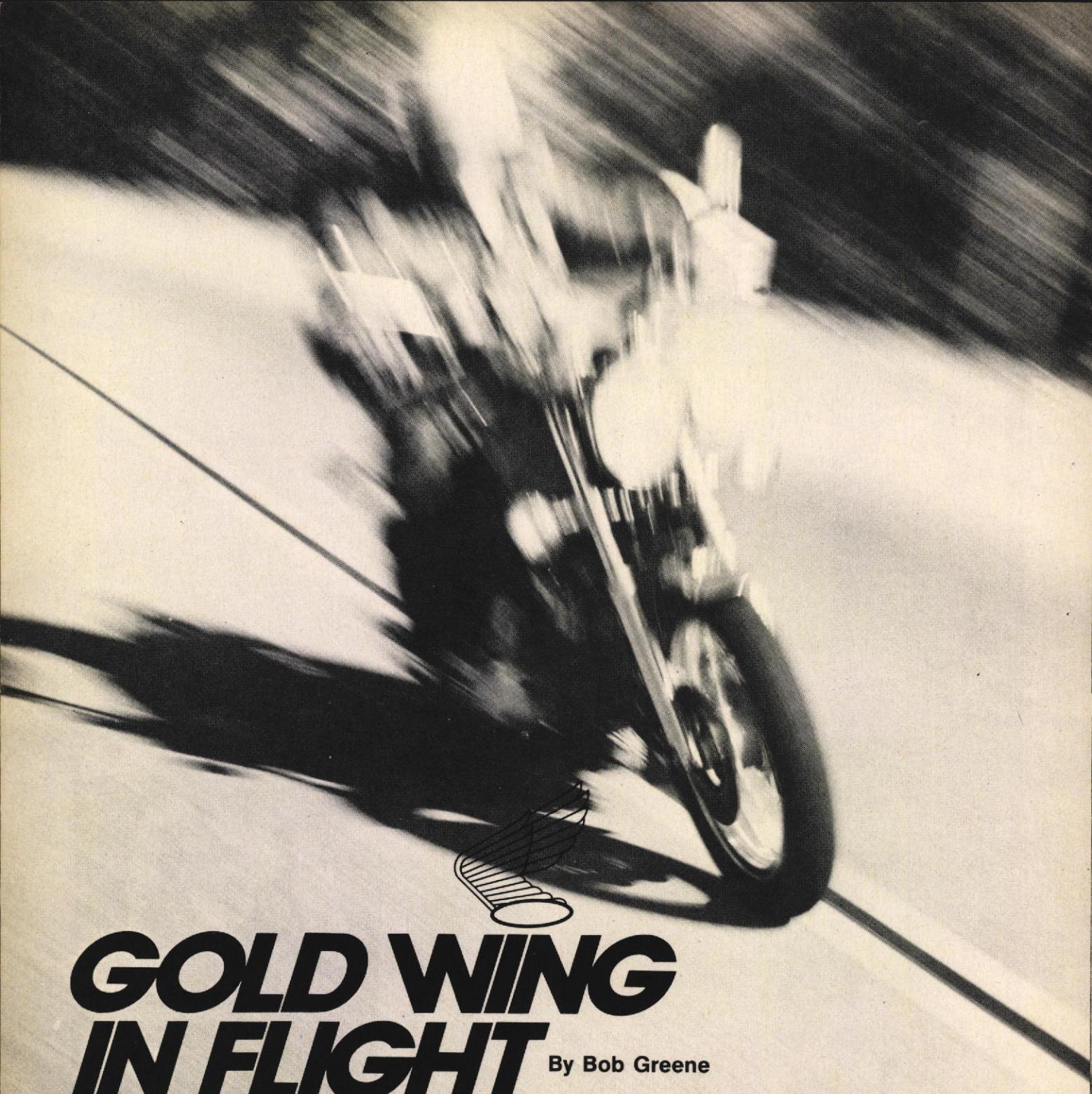
Hideki Bernard "Rally" Sugihara, the 24-year-old styling whiz who sculptured the Honda MR-175, MT-250 and CR-125, did his usual svelte job on the GL-1000's aesthetics—sheetmetal and engine. Especially considering the Wing's many components, he brought it off gracefully and in good taste. The weight factor has been minimized by the exceptionally low placement of engine and fuel tank. Unlike Honda's 750 Four, saddle height is low enough for most people to handle with ease. Surprisingly, Honda is not following the Gold Wing out of the nest with a many-feathered array of custom accessories, other than farming a touring fairing out to that old Illini wind-splitter himself, Craig Vetter. Wise move.

Competitively, I see the Thousand as an invasion of Milwaukee privacy at long last and, were it not for their recent spurt forward in the area of exotic chassisware, a direct broadside at Guzzi and BMW. More likely, Honda's own CB-750 will take the worst pecking from the Gold Wing. It's a moot point in a way, for Honda has built its own stairway to the stars, always providing a new grail for their loyal legions to pursue. They had to build the Gold Wing, just as they now will have to top it. How utterly escapes me. •



Cars, air box and manifolds.
Vacuum-controlled air-cut mechanism at front (top of photo) enriches mixture upon deceleration, stops backfiring.
ABOVE RIGHT—Fuel is piped through body of air box to 32mm Keihin carbs. Air cleaner sits on top of box, is accessible through dummy fuel tank.
LEFT—Right rear of engine with output drive cover removed to allow gear to escape once U-joint is slipped off spline. Also fuel pump worm drive.
RIGHT—Ring and pinion rear end with tapered Timkin bearings on pinion gear shaft. Rubber bushings cushion wheel hub from engine shock loads.





GOLD WING IN FLIGHT

By Bob Greene



FAR LEFT—There was never a motorcycle like this! Sumptuous saddle and 200 cubic inch glove compartment in erstwhile gas tank. Big as it is, you'll probably run out of nerve before cornering clearance. **LEFT**—Mirrors are as steady at full chat as at rest. The Wing flew up on its center perch relatively easy for me but some bystanders had to wrestle it three out of four. The sound is sheer hi-fi.

Well, Honda's gone and done it again...run the American cyclist through their electronic computer and come up with the answer to most of his dreams. The irresistible force. Priced a thousand dollars under much of its exotic competition, at around \$3000, the Gold Wing is fabulously smooth at any speed, rides almost above reproach, is utterly unique and exhibits excellent workmanship. But there's more, of course; let's see how it went on our pitifully short, deadline-dictated ride of 400 miles.

Like any big bike, the Wing takes some getting used to; the more you ride it, the smaller it gets and the more in command you become. Itching to subject it to our favorite Big Mountain Yardstick, the Wing was immediately set free in this 35-degree, 5000-foot atmosphere. Twisting and climbing relentlessly, it soon let us know of its straight-line preference. The Wing resists being put to the mat in either direction. Not that it can't be laid over quickly and banked at the most extreme angle, but our test bike evidenced a springy tendency to return to the vertical unless otherwise contained. In contrast to a European chassis, the Wing, once pitched into a given bank necessary for a given turn, does not set or lock in at that bank, requiring instead constant attention and control on behalf of the rider. Once accustomed to this typically Oriental quirk, good time can be made, but give yourself a couple of days or longer before really knuckling down in the hills. Contributing to this disquietening effect is a noticeable kick-up at the back when encountering a rippled or pot-holed corner, on which occasion the Wing often jumps up and does a little oscillating number that quickens the pulse of the early acquaintance. Even in a straight line, the Wing does not sit as rock-steady as a Kawasaki Z or Suzuki Rotary, for example, but it is quite stable nevertheless, and we encountered no uneasiness at any speed running right down the road. In fact, the ride is pretty plush, except for some sections of infamous Southern California freeway where the still-tight front forks could not completely cope with the frequency of the misaligned breaks in the cement slabs and developed the common freeway hop. Even so, the ride is a vast improvement over the Z, for example, for both rider and passenger. But for the faster rider I would like to see Honda go that extra mile on chassis geometry as it relates to cornering stability. You can soon become used to it as is, and become very quick, but you can always be had by a comparable rider on a more savvy mountain bike.

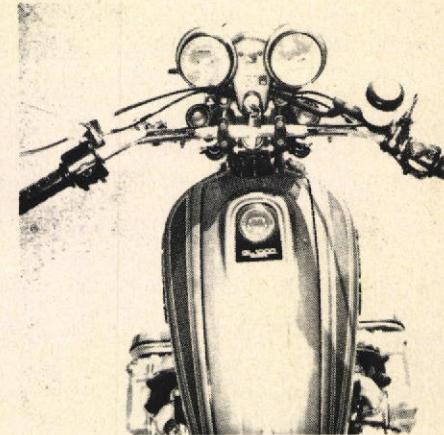
As a touring mount, the Wing is ideal. A beautiful saddle and proper riding position make it extremely comfortable on the long haul. And the



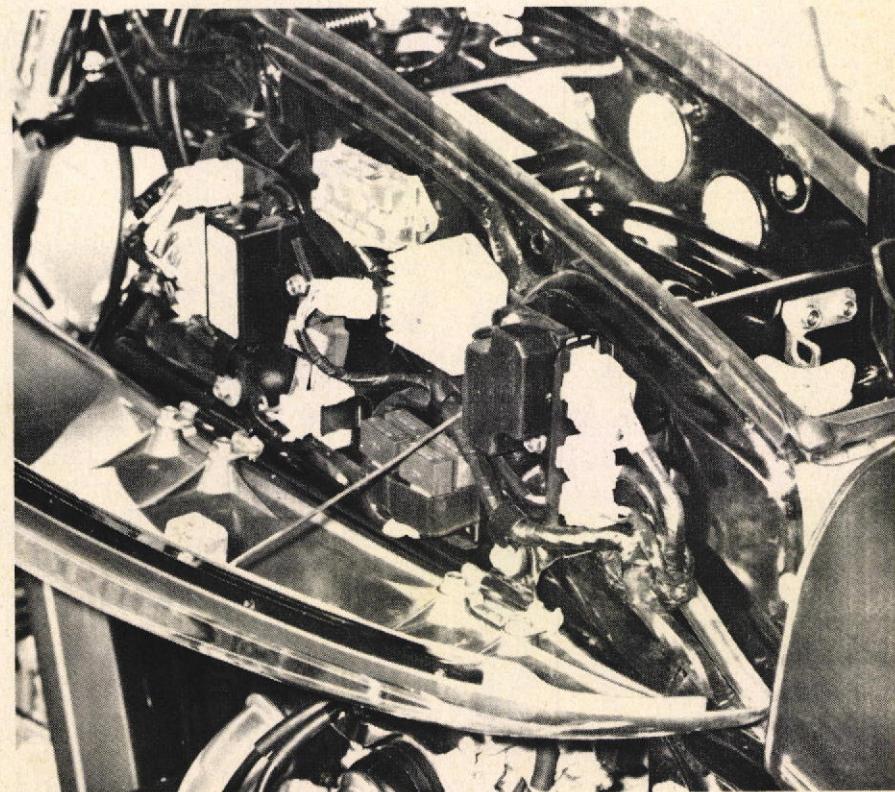
Hustling the Mountain. Riding position is good and expansive. But consistent attitude of bank through a corner requires concentration because bike does not sit steady, wants to return to vertical. Even so, it is capable of very creditable speeds when cornering.



That's the gas tank. Under the saddle for safety's sake in an accident, it also affords lower center of gravity.



And that's the toolbox. Pinned clutch lever limits handlebar adjustment. Throttle needs brake for fixed setting.



Various electrical terminals are conveniently bunched in left tank panel. A trouble light would have been a nice touch. Center panel contains glove box, must be unlocked to gain access to gas filler.

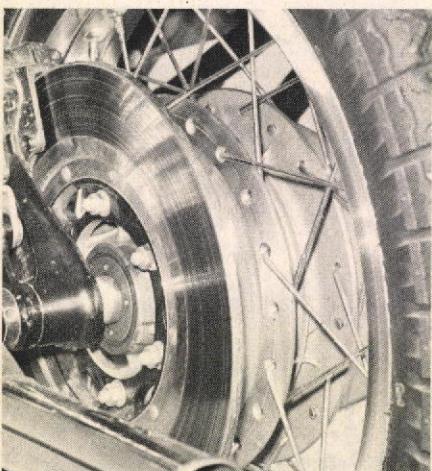


GOLD WING IN FLIGHT

weight/suspension combo has a profuse appetite for eating bumps. It's a bitchin' L.A. to Las Vegas runner. Throw a Windjammer on that big dude, curl up behind it and wail. The power's there—similar to a Z—and the smoothness of the engine is actually foreign to bikers. More than that, the Wing is devoid of the unnerving scream or whirr of contemporary multis that preys on the rider's subconscious; there is never that awareness or fear that the engine is about to come unstrung. Blissful quiet prevails even at high cruising speeds, probably due to the engine's water-jacketing, the buried gearbox, the soft Gilmer belt cam drive and the silent shaft final drive. Honda gets an A for effort in the area of overall silence and smoothness. Ditto for the ride. It's a marvelous cruiser.

And although not quite as at home in town because of its heft and length, the Big H splits traffic with surprising agility and ease. I found it to be no appreciable handicap in a sea of cars. They usually split as we approached, more than likely due to the full-time lights-on setup of the wiring system. And quick stops can be handled with assurance since the triple disc brakes are very effective without being the least big touchy.

What about the torque reactor? Does it really work? You bet it does, exactly as effectively as they said it would. In fact, the whole machine came off pretty well as we had been led to believe it would by the Honda folks, even down to the gas mileage. Running very hard over the mountain, often in fourth gear to keep the engine on the boil, corrected mileage figured out to 30.8 miles



Superb finish is brought down by sloppy fit of spoke heads in hub; you could throw a cat through holes. Big brakes are apropos: Wing's 100 lbs. up on a Z.

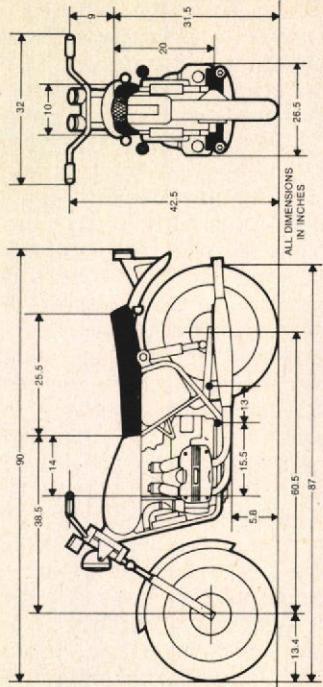
per gallon. In town it turned up 35. But at a steady 55 mph highway cruise it jumped to an exciting 50 mpg! It figured; the bike seemed tall of gear.

Back at the shop, inspection centered around the wheels. Not a sign of a security bolt or rim screws to hold the tire to the rim in the advent of a blowout. The bent tip spoke heads in the rear wheel showed daylight through half of their circumference around the hub flange holes, although the front spoke heads fitted very well. And the rear wheel hub spoke flange measured 7mm narrower than Honda's 750 Four, meaning that the spokes were more vertical and less resistant to side forces such as would inevitably be encountered with the fitting of a sidecar. Surely the Gold Wing will be viewed as a favorite hack hauler. How much better if Honda had been able to widen the spoke flange and design it to accommodate straight-pull spokes. And Honda's inexplicable habit of integrating clutch lever and electrical switch body in a single fixture, pinned to the handlebar to prevent shearing the handlebar-routed wires, precluded personal adjustment of the bars to the most advantageous position because of the subsequent cockeyed relationship of the clutch lever. Also should a tumble break the clutch lever, the electrical switch housing blows apart and strands the bike. How easy it would be just to divorce lever and switch and solve the whole mess.

These relatively small things aside, is the Gold Wing an exciting and practical way to go for the average motorcyclist? Is it too complex for the guy who likes to do his own service work? Is it overkill? It's damned exciting, especially for the escape artist who uses Route 66 as a part of his act. As for practicality, the GL-1000 denies the pepper tree tuner nothing, many of its components—plugs, valves, spark and valve timing—being actually easier than most of the big cruisers by virtue of their proud exposure. Overkill? A better word would be modernization. For with the Wing Honda moves the motorcycle closer to the automotive concept—radiator, fuel pump, ring and pinion, glove compartment, etc. It's the logical evolution, expectantly conceived to outlive anything built prior to its inception, provided it is afforded no more than decent care. True, several of the service rituals—mainly dealing with the driveline—will be best left to the qualified Honda mechanic. But it is anticipated that few owners will ever have occasion to get into the engine.

Having spent a week on the Wing, I see it not as a replacement for any of its contemporaries but merely what it is, a far-out extension of Honda; the massive, sophisticated Grand Tourer of the Twentieth Century. Now, at last, we can stop holding our breath. •

ALL DIMENSIONS IN INCHES



TEST BIKE

Engine serial.....GL1E-1000046
Base price as tested.....\$3000 approx.
Factory warranty.....6000 miles or 6 months

ENGINE

Type.....Opposed Four
Displacement.....999cc (61 c.i.)
Bore x stroke.....72x61.4mm (2.834x2.417 inch)
Claimed HP @ RPM.....N.A.
Claimed torque @ RPM.....N.A.
Compression ratio.....9.2:1
Lubrication system.....Wet Sump
Carburetion.....4 Constant velocity type
Air filter.....Paper filter
Ignition system.....Battery, ignition coil
Electrical system.....12-volt alternator
Starting.....Electric or kick
Exhaust.....4 into 2

DRIVE TRAIN

Clutch.....Wet multi-plate
Transmission/shift.....5-speed, down for low
Gear ratios.....1st, 2.500-2nd, 1.708-3rd, 1.333-
4th, 1.097-5th, 0.939
Primary Reduction.....1.708
Secondary Reduction.....0.825
Final Reduction.....3.400

CHASSIS AND SUSPENSION

Frame.....Double-loop tube
Suspension, front.....Telescopic
rear.....5-way spring/shock
Turn radius.....192"
Brakes,
front.....Dual hydraulic disc, 11-inch
rear.....Single hydraulic disc 11-inch
Tires,
front.....3.50x19
rear.....4.50x17
Rim locks, front/rear.....No

WEIGHTS AND CAPACITIES

Weight, wet, unladen.....647
Allowable gross weight.....1007
Fuel capacity.....5 gallons
Engine oil.....3.8 quarts

STANDARD EQUIPMENT

Speedometer.....150 mph with odometer
and trip reset
Tools.....19-piece
Stands.....side & center
Passenger provisions.....pegs & saddle strap



**More cycles
ride on Dunlop
than any
other tire
in the world.**

Dependability. Safety.

Performance. Three reasons
Dunlop tires turn on more cycles
and cyclists than any other tire.

Like the Dunlop K-81. Its trigonic
profile (the industry's first) assures a stable wet grip,
and it bites hard even at a 45 degree lean. That's
performance! Dunlop has proven tread designs for
all kinds of riding and racing. Get a pair on your
cycle. You'll turn on to Dunlop too.



DUNLOP

Buffalo, N.Y. 14240

HIGH SCHOOL MX REPORT

MOTORCYCLIST MAGAZINE PROMOTES HIGH SCHOOL MX ASSEMBLIES
GIANT HIGH SCHOOL MOTOCROSS SERIES FOR 1975 SPONSORED BY YAMAHA
BREAK INTO BIG-TIME MOTOCROSS: 1976 HIGH SCHOOL SUPERBOWL CHAMPIONSHIPS

BE A MOTO-CROSS LETTERMAN!



Motorcyclist Magazine is heavily involved in the high school motocross effort to the extent of sponsoring 100 forthcoming high school assemblies where it is anticipated that up to 1600 students each will attend. The assembly programs will include the Superbowl motocross film, safety films, a **Motorcyclist Magazine** slide show, and the presence of motocross riders, with their machines, to answer questions from the student body on riding techniques, etc. Also included in the show will be brochures from the whole spectrum of manufacturers explaining their products and business opportunities along with the ever-popular decals. The magazine has also been instrumental in getting a motocross course accepted as an accredited curriculum in the Inglewood-Torrance, California, school district for openers, with high expectation that the course will eventually become accepted statewide! With this kind of boost from Yamaha, Media-Max and **Motorcyclist Magazine**, there remains little doubt of the future of high school motocross and the impact it will have on American involvement and success worldwide. To schedule a High School Motocross assembly for your school, contact Carl Adair, Media Max, (213) 258-4678.

BREAK INTO BIG TIME MX!



Yamaha knows how to get the ball rolling! Just as they pioneered the Enduro concept, Yamaha now launches a 12-state High School Motocross Championship series coast to coast for 1975. Six qualifiers will be held for each championship a month prior to the events, with a \$200 scholarship going to each State Champion. Although the program has yet to get into full swing, it is expected that the state-level champions will eventually come to a national confrontation. You will be kept apprised through **Motorcyclist Magazine**'s New High School Motocross Report of the dates and locations of each championship well prior to its running. Full details will also be available at local Yamaha dealerships across the nation. And waves of teen-age backup riders and teams will virtually assure Yankee domination of international MX in years to come.

CRASH THE SUPERBOWL!

Meanwhile **Motorcyclist Magazine** and **Superbowl** promoters **Media-Max** are putting together a five-state regional High School Championship program for the year 1976 that will run in conjunction with the **Media-Max International Series** and terminate in the Los Angeles Coliseum Superbowl. A minimum of 12 qualifiers held over a six-month period will sort out the teen-agers who will compete in the five semi-finals at the Seattle Dome, Atlanta Stadium, Pontiac Dome, New Orleans Superdome and a yet-undecided site in New York. The winners of these races will then move on to the championship final at the L.A. Coliseum. In each instance, the Friday night high school program will precede the Saturday night international contest. Don't miss the dress rehearsal of this '76 program this July 18 when the Cal-State Championship will be decided at the Coliseum Superbowl in Los Angeles. Either way, keep your eye on **Motorcyclist Magazine**—we'll carry it all in future MX reports.

The vans from Dodge.

They'll take almost anything you want to carry almost anywhere you want to go.

Just because we call them Tradesman vans doesn't mean they have to act like tradesmen. Far from it. Beneath their shiny skins are the kind of big, freewheeling vans that play just as easily as they work.

Throw open their doors. And they're ready to take on a weekend's worth of dirt bikes, surfboards, scuba gear, camping equipment, fishing stuff. And friends.

Wherever you're heading, there's nothing better for getting your gear from here to there than a versatile Dodge van.

A Dodge Tradesman van. With the best gas mileage of any van tested by the E.P.A. With a smaller Six and smaller V8s (that still pack plenty of power). A big, standard 23-gallon gas tank. The kind of easy handling that'll handle most any situation. And a choice of three size vans on two size wheelbases. (Including the Maxivan—biggest van on the road. And off it.)

The Dodge Tradesman vans. They'll take almost anything you want to carry almost anywhere you want to go.

Custom touches such as "mag" wheels, fat tires, paint trim, and sidepipes are available through custom shops.



CHRYSLER
MOTORS CORPORATION

NO.1 FOR THE MONEY IS DODGE


Dodge
Dodge Trucks





I'VE BEEN DRIVING for her family six years now so I know if things don't go the way she plans, Miss Katherine gets furious. This evening, when we pulled into the Pullium's driveway her plans were very definite. "No need to wait," she said, "David will take me, uh, home."

"Pardon, Miss Katherine, but I don't see his car," I said.

"He's simply a little later than usual," she said. "Good night, William." And into the party she went. I waited, just in case. And ten minutes later, David arrived. I've never seen anybody show up at a classy party riding a motorcycle.

Jimmy—he drives for the McCormicks—he said it was hardly proper. But Roland scoffed, "Nonsense, man, that's a Z-1." I asked him, "What's a Z-1?"

"Maybe the finest touring bike ever made, that's what," he said. And he launched into an emotional monologue, I'd call it, about the bike's 4-stroke, 4-cylinder, 903cc engine, its prestige, world records and how money talks. Even Jimmy was impressed.

So all I can do now is wait for the storm 'after the party, when Miss Katherine finds out she won't be going anywhere in the back of David's limo. And I'm wondering if David would consider putting a side-car on his Z-1 and hiring a second driver.

Kawasaki
lets the good times roll.

Good times include riding safely. We recommend wearing a helmet and eye protection, keeping lights on and checking local laws before you ride. See Yellow Pages for nearest Kawasaki dealer. Member Motorcycle Industry Council.



It's a thrill to win a race. Stand in the Winners' Circle. Get the gold. Some seem to live there, while others may experience this adrenaline trip only once in a lifetime. But you know it's coming; you made it happen.

The Motorcyclist Magazine All-Star Award is something else; many have physically earned it, statistically earned it, but can't win it until you give them the nod. That's the All-Star mystique. No one can point to exactly why you throw your shoulder behind this rider or tuner or that one. Maybe it's the way he handled a loss rather than a win, or the undaunted manner in which he snapped back on form after being dogged by an unfair run of foul luck. More than likely he's the best at his craft, but that's not all. He's got to be a whole man.

The 18 All-Stars before you—two-wheeled gladiators of every major contest within the last year—are champions twice over, having won not only in their respective field of battle but in your hearts as well. Even above the many material rewards that went to each winner following the official presentation at the Americano Hotel during the height of Daytona Speed Week festivities, the warmth and encouragement of your recognition will ride with him throughout the months to come. The mark of an All-Star.

For a full report on the banquet and presentations, don't miss the June issue of Motorcyclist.



ALL STAR AWARD WINNERS

Man of the Year: KEN ROBERTS

Dirt Track Tuner
SHELL THUETT
Road Race Tuner
KEL CARRUTHERS
Moto-Cross Tuner
DON JONES
Foreign MX Rider
ROGER DECOSTER
250 MX Rider
JIM POMEROY
Open MX Rider
BRAD LACKEY
Novice Dirt Track Rider
MARK SMITH
Junior Dirt Track Rider
JAY SPRINGSTEEN

Expert Dirt Track Rider
KEN ROBERTS
Foreign Road Race Rider
GIACOMO AGOSTINI
Junior Road Race Rider
PEE WEE GLEASON
Expert Road Race Rider
KEN ROBERTS
Trials Rider
LANE LEAVITT
Enduro Rider
BILL UHL
Novice Road Race Rider
SKIP AKSLAND
Drag Race Rider
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MOTORCYCLIST SPECIAL AWARD
DON VESCO

Dual in



Two great ways to express yourself, on the trail or on the street. Both from Harley-Davidson.

The SX-175. And the all-new SX-250. Both are engineered and built to take on any challenge . . .

and come out ahead. They feature tough-as-hell competition-type front forks. And maximum starting reliability with a solid state, breakerless, CDI ignition system.

Plus quick-detach ISDT rear hub. Tach and speedometer with odometer resettable in either direction.

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the sun.



And they incorporate a primary kick start. Kick it over in any gear. A time and temper saver!

Both motorcycles have an independent ignition system that lets you remove battery and lights to reduce weight for competitive riding.

For durability, both SX-175 and SX-250 have an integral oil reservoir within the frame. No separate tank.

Two great motorcycles. Take your pick. And you'll be prepared for any duel under the sun.

Harley-Davidson believes in safety first. Before you start out—put on your lights, your helmet—and watch out for the other guy.

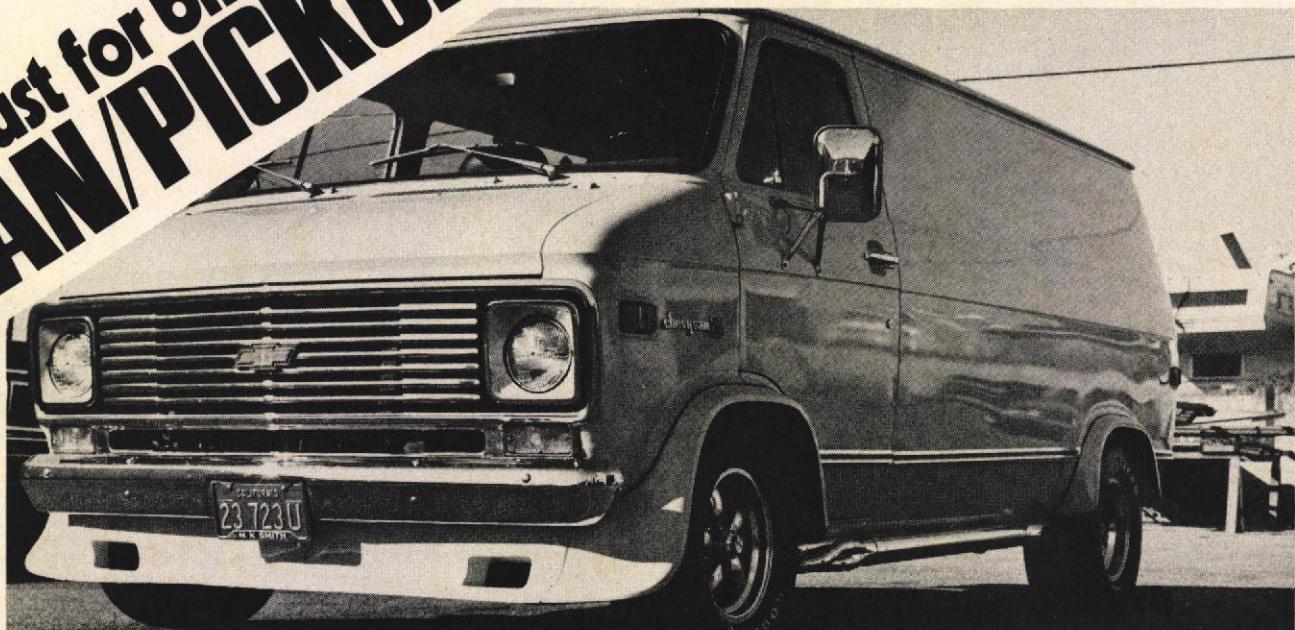
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The Great American Freedom Machines.

Member Motorcycle Industry Council.

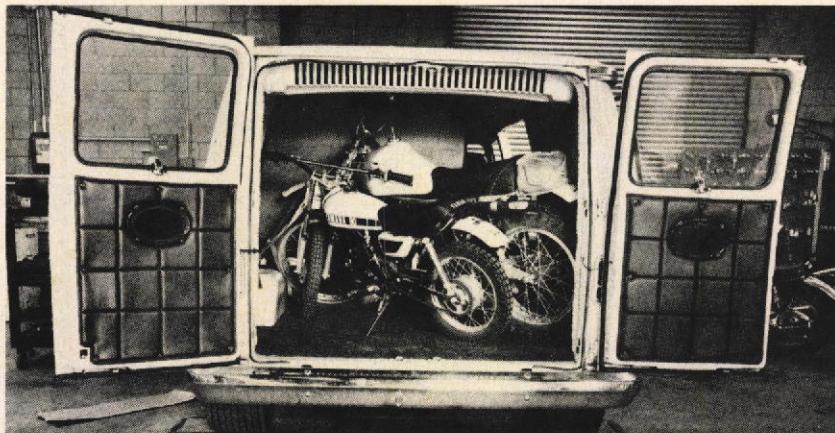


Just for biker's... VAN/PICKUP TIPS

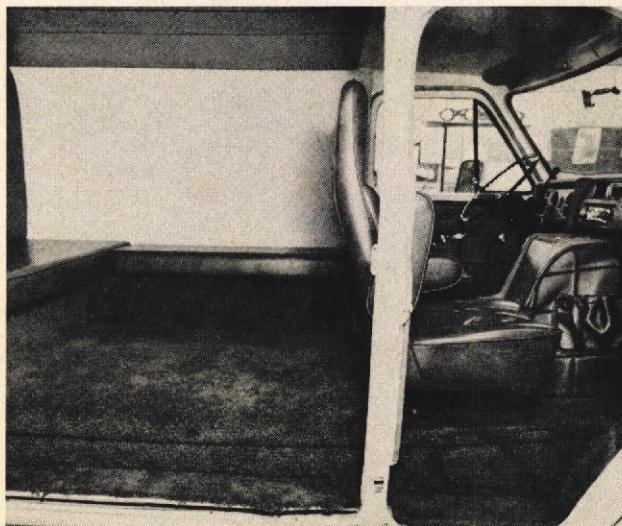


Gary Hooker's Chevy van showcases Hooker products: headers, sidemounts, spoiler, fender flares, air filter and auxiliary fuel tank which gives van total range of approximately 750 miles. Van also has Edelbrock manifold and Keystone wheels.

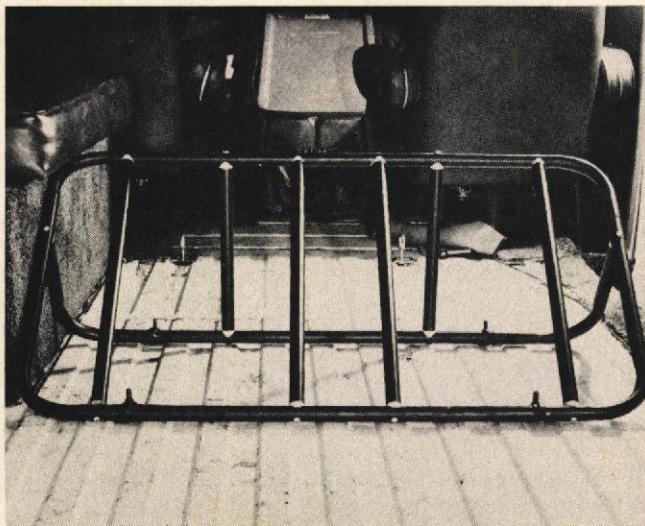
Carpeted and paneled with seemingly unlimited seating and storage, the partition at rear separates a padded deck over more storage space. Outstanding feature is flexibility. Van interior was designed to convert quickly from plush "city van" to all out desert hauler.



Simple removal of rear deck gives room for full size and mini bike.



The interior was designed for quick conversion. (Twenty minutes from luxury van to utility bike hauler.)

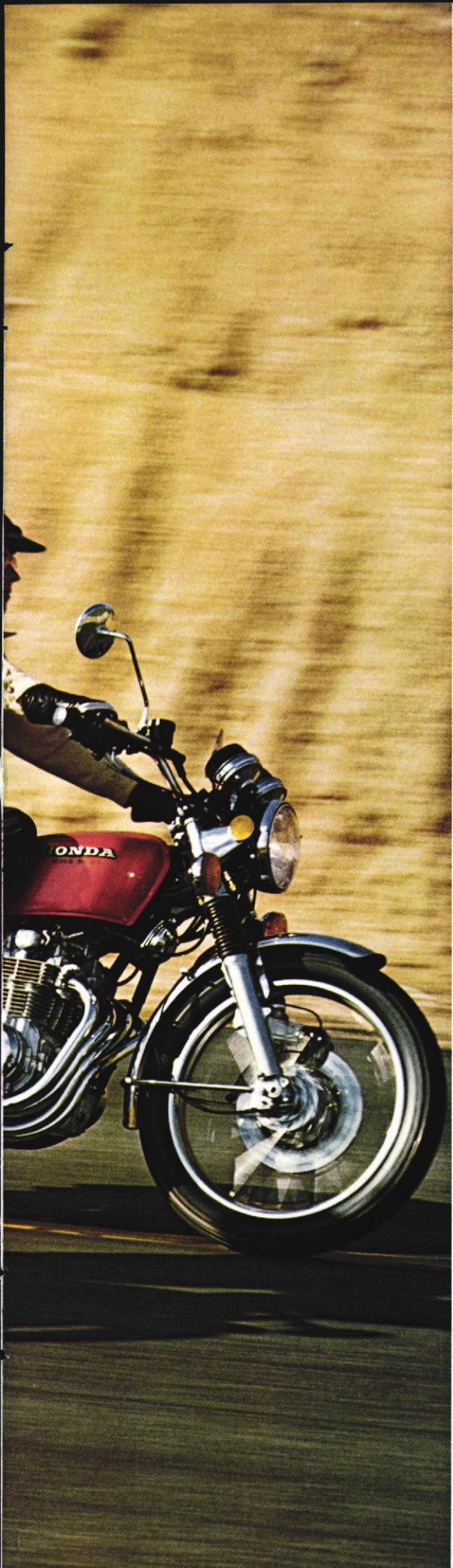


Well hidden under carpeting were anchor plates for tiedown and wheel rack. This is prototype wheel rack from Hooker. It hauls three bikes and will also fit in mini pickups.

HONDA '75. FOLLOW THE LEADER.







DOWN THE ROAD.

When someone talks about "The Fours" in motorcycling, you can be pretty sure they're talking about the Honda Fours. They've been the leading topic of discussion among enthusiasts for a long time because Honda just keeps making them better and better.

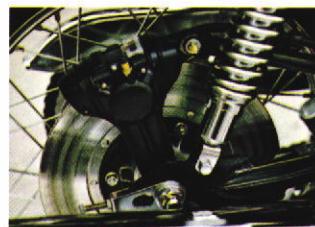
1975 is no exception.

Early this year, the striking new 400 Four was introduced. And now the newest models of the famous 750 and 550. Look for them at your nearby Honda dealer's showroom.

New features on the CB-750F and CB-550F are for the road rider's comfort, convenience and safety. The most obvious change is the wild "4 into 1" exhaust and muffler system. It's so good-looking, you might think Honda made the change just for looks. No way. It's quieter and helps to improve the engine's torque characteristics.

The new instrument panel is a complete "dashboard." Now, besides the speedometer, tach and indicator light panel, you'll also find the main ignition switch and fork lock. Everything — right in front of you.

There's an electric starter interlock to prevent the new 750 and 550 from starting in gear. Larger, brighter turn signals. And many other new features added to the best feature of all — the dependable, powerful four-stroke, four-cylinder OHC Honda engine.



CB-750F new rear disc brake.



New recessed fuel tank cap.



Full instrumentation plus ignition switch and fork lock.





OVER THE HILLS.

The MR-175, Honda's newest "enduro" bike for the serious off-road rider, really flies. At a mere 204 pounds, it's easy to see why.

This is a competition enduro bike with a powerful 171cc two-stroke, single-cylinder engine. It incorporates many of the design characteristics of the race-winning Elsinore™ CR-125M. Lightweight, strong frame. Offset-axle front forks. Finned aluminum rear shocks. They help give the MR-175 the quick, responsive handling characteristics you'd expect in a champion motocross machine.

But the MR-175 also has its own special features for rugged cross country competition. A five-speed, wide-ratio transmission. A radically upswept spark arrestor/muffler for maximum ground clearance. Smaller headlight and taillight to conserve weight. And the headlight's protected with a screen rock guard.

The new fuel tank holds 2.9 gallons so you can cover lots of ground before refilling. The seat's heavily padded for more comfort when you're sitting; very narrow to make it easier when you're standing. And, of course, there are the Honda aluminum alloy rims —lightweight and self-cleaning.

When you put all these great features together as only Honda can put them together, you have an enduro winner—the MR-175. See for yourself at your Honda dealer's. Then head for the hills.



Adjustable, finned rear shocks; light alloy rims.



Speedometer with trip meter.



Large capacity fuel tank and protected headlight.





THROUGH THE WOODS.

Slow and easy. That's the way to master trials. And the way to really enjoy trails. The bike for both is at your Honda dealer's now. The new TL-250.

Honda engineers, with a little help from their friend and rider, world champion Sammy Miller, have created what may be the ultimate motorcycle for this kind of precision riding. The 248cc OHC four-valve, four-stroke, single-cylinder engine on the TL-250 has the kind of sensitive response that trials demands. And that power is delivered through a constant-mesh, five-speed trans with trials-engineered gear ratios. Just the power you want over a very wide RPM range.

The front fork construction is an expert rider's masterpiece. The rake is a steep 1.5 degrees from the caster angle—superb for trials handling. And the bottom bridge is arch-shaped and made of forged aluminum alloy for greater clearance and strength.

Extensive use of aluminum alloy in other components contributes to the TL-250's light weight and rugged durability. Brakes, air filter and ignition components are all well-protected from water or dust. The tucked-in exhaust system helps deliver the smooth, low-speed power and keeps the noise at a purr.

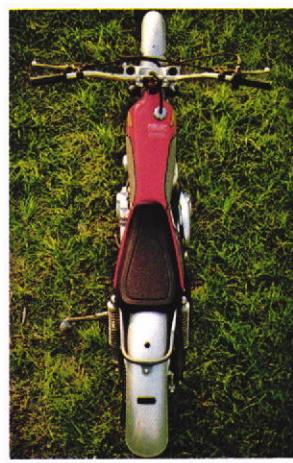
The new Honda TL-250 looks fragile because of its slim, streamlined design, but don't be fooled. It's ready to carry you over rocks, across logs, down gullies and through the woods with confidence.



Offset-axle front forks.



Quiet, tuckaway exhaust system.

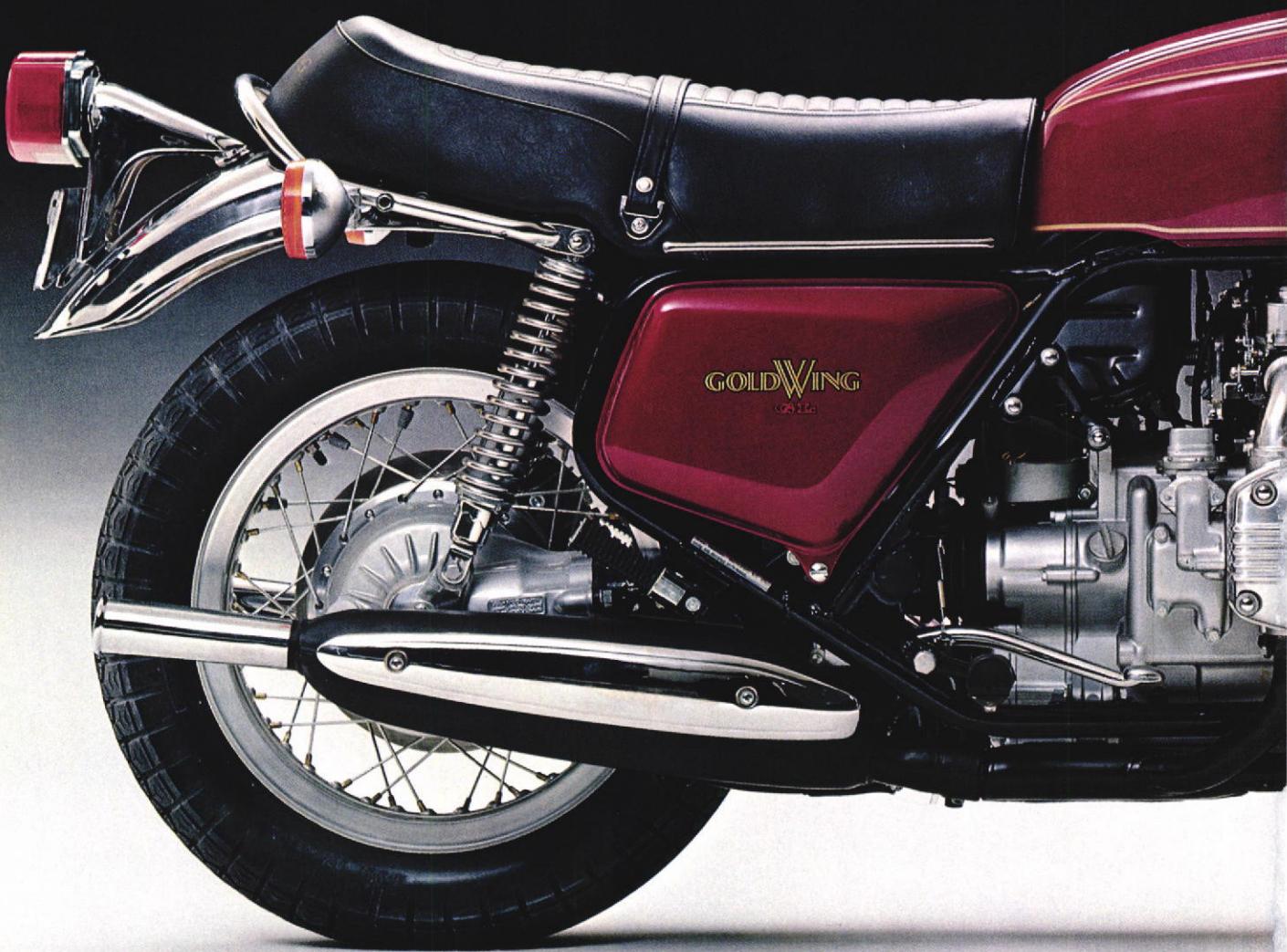


Extra-slim trials design.

TO A NEW ERA IN THE GL-1000.

Once in a decade a motorcycle appears that sets the standards for years to come. It is usually built by the leader. By Honda. In 1958, it was the little Honda 50 that put America on two wheels. In 1969, it was the mighty Honda 750 Four that put power on the road. And now...Honda introduces the ultimate in two-wheeled touring—the GL-1000. This new giant among

road bikes combines an innovative, powerful and dependable engine with a frame and chassis that provide the finest in comfort, braking and handling for the rider. The only way to believe that a bike this large can be as smooth-riding, quiet-running and easy-handling as it actually is, is to see it for yourself. Come in to your Honda dealer's soon. Read on for more facts and features.



MOTORCYCLING.







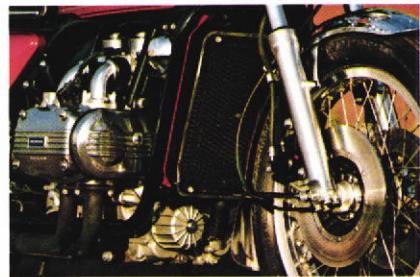
THE LEAD WIDENS.

There's no question that the GL-1000 is a major jump in motorcycle technology. To prove it, let's start with the engine. It's a 999cc SOHC, water-cooled, horizontally opposed four. The crankcase is split, with two cylinders to each half. The camshafts are driven by two timing belts at the front of the engine. Four constant-velocity carbs and the large air cleaner are located on top of the powerhouse. The drive train features an easy-shifting clutch, five-speed trans and quiet shaft-drive system.

A unique alternator rotor developed by Honda engineers serves as a flywheel to balance the natural torque of the crankshaft. The result—a superbly smooth, incredibly powerful, supremely confident ride.

The chassis design of the GL-1000 matches the sophistication of the engine. There's a low center of gravity for excellent low-speed handling, fantastic high-speed stability. The "tank" is a fooler—actually it's a storage compartment containing many GL-1000 components where you can get to them easily. The real tank is under the seat and holds a whopping 5.0 long-distance gallons. Braking? Try *three* hydraulic discs—two up front, one in the rear. The instrumentation, finishing and other features are as advanced and innovative as you'd expect from a new Honda.

We only have room here to give you a quick glimpse of this great new motorcycle. There's plenty of room to see it all at your Honda dealer's. Come in soon and discover how far the GL-1000 has extended the Honda lead in motorcycling.



Dual hydraulic front disc brakes. Water-cooled, opposed four powerhouse.



Easily accessible fuse box.



The "complete" instrument panel.

THE LEADING LINE.

Road Bikes



GL-1000



CB-125S2



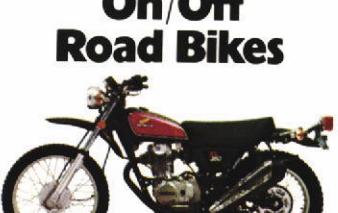
XL-70 K1



TL-250



CB-750 K5*



XL-350 K1



CT-90 K6



MR-175



CB-550 K1**



XL-250 K2



ST-90 K2



CR-125M1



CB-500T



MT-250 K1



ATC 90 K3



TL-125 K2



CB-400F



XL-175 K2



ATC 70 K1



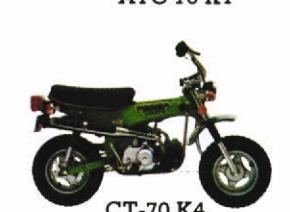
XR-75 K2



CB-360T



XL-125 K1



CT-70 K4



MR-50 K1



CL-360 K1



MT-125 K1



Z-50A K6



CB-200T



XL-100 K1



CR-250M



QA-50 K3

Minibikes



HONDA
Good things happen on a Honda.

*CB-750F available early May

**CB-550F available mid-April

Always wear a helmet and eye protection when you ride. Model availability may be limited. Dirt bikes, Minibikes and ATC's are for off-road operator use only. CR's are designed for motocross use only and are sold "as is" without warranty. K, S and M1 numbers in Honda model designations indicate model changes. ATC 70 K1 is a 1974 model. Write American Honda Motor Co., Inc., Dept. PM, Box 50, Gardena, Calif. 90247. See Yellow Pages for nearest dealer. ©1975 American Honda Motor Co., Inc.

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on display... Barris' Batmobile, Munster Caoch, Green Hornet's "Black Beauty" limo, Bonnie and Clyde's Death Car, Mannix's Roadster, Bearcat's fighting Stutz, the Beverly Hillbillies' winning street drag racer.

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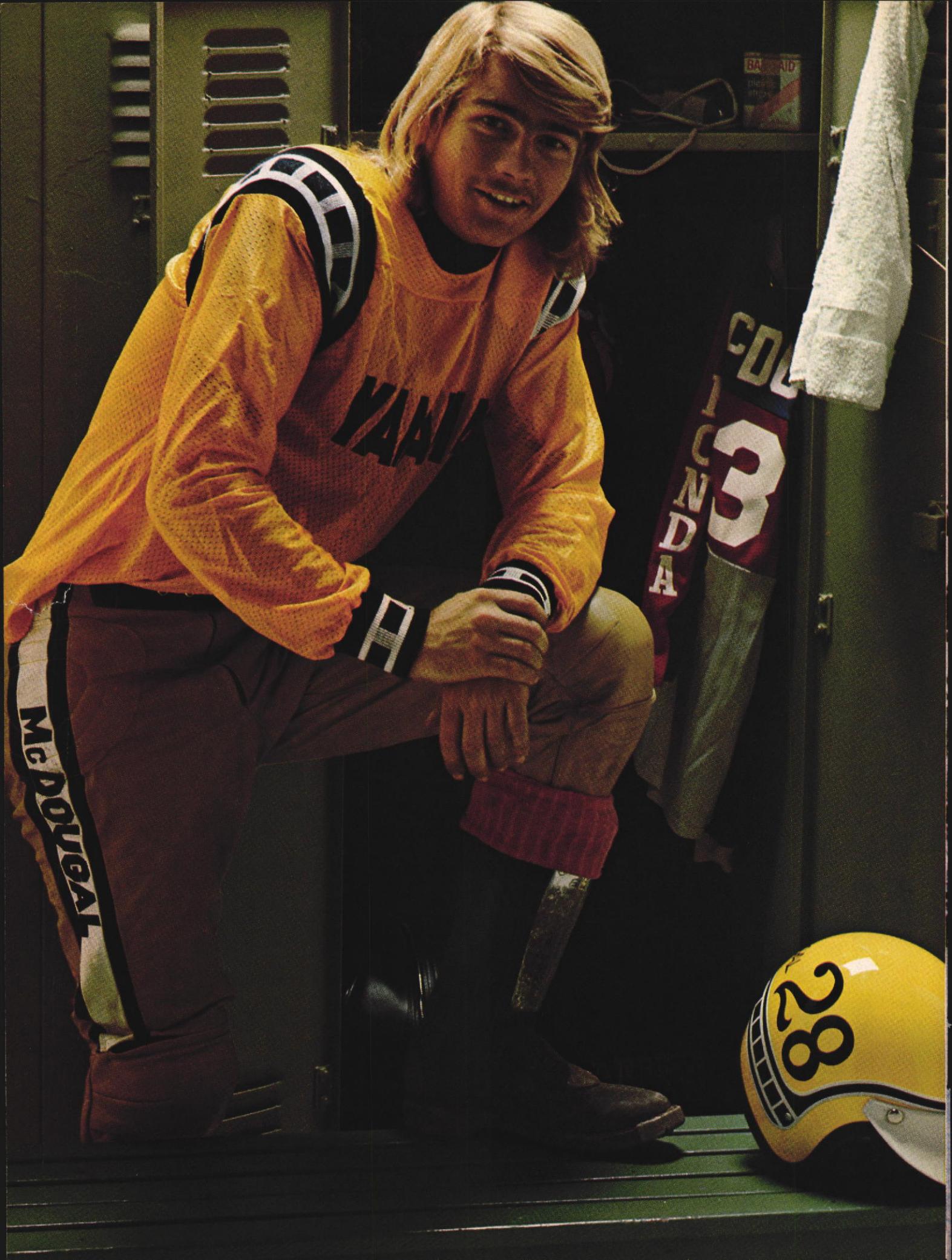


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McDOUGAL

HAWAII

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28

“I'd rather switch than fight.”

“I'm Bruce McDougal. I ride motocross. In fact, I was runnerup in the AMA National 125cc Series last year, riding for Somebody Else. And I'd probably still be riding for Somebody Else except for a new Yamaha called the YZ125 Monocross. I ran against that bike in the last two Nationals of last year and I got beat both times.

“If you can't beat 'em, join 'em. And that's just what I did. I'll be riding the YZ125 this year. And I'll tell you something about that Yamaha monoshock: You can just let the other guys fight for the smooth line. You take the fastest line, I don't care how terrible it is. You have 195mm of front stroke and over six inches of rear stroke going for you. You don't feel the bangs. You don't feel the bumps. You run away.

“Same thing with the rough sweepers. You don't shut the YZ125 off. You take it through in third or fourth. Practically flat out. You have that long travel going for you. You have that single shock keeping your rear wheel right in line. You're not sliding, or high-siding. You're not fighting the bike. You are running away.

“Jumps are a joy. The YZ125 comes down straight, and it comes down soft. Torque is excellent. The YZ125 has the same close-ratio six-speed box as the factory racers. And it has over 20% more horsepower than the bike I ran against last year. The YZ has more everything right up and down the line.

“Would I buy a YZ125 Monocross? Sure. I'd rather win than lose.”



“I'd buy a Yamaha.”

Someday, you'll own a Yamaha.

HOW TO RIDE ENDUROS

PART I: Let's Leap Into The Incredible Time-Game Just For The Fun Of It.



By Dave Ekins

So you wanna go out and fill your boots with dirty water? Coat your goggles with dust, and send your tired motorbike to an early grave? You wanna get famous like the Penton Clan, blow off the Bultaco Enduro Team, and raise havoc with the Dick Burlesons and Mike Adamses? Hey, these are very admirable "wannas."

To begin with, enduros are fun. Sheer enjoyment without the risks found in racing, yet competitive.

It's unfortunate that every time you read an enduro report about some annual toughie, there's always photos of exhausted guys hanging off their bikes or a string of riders playing follow the leader into a 12-foot deep river. They never show you the good part. The fun ride through back-country you would only consider hiking to, power slidin' along a mountain dirt road, or the champagne feeling when you've crossed the finish line.

If the whole thing was as bad as the photos you saw, nobody would complete the run. There have been and will be tough enduros, but usually they are for the intermediate off-road rider and,

frankly, a bit unchallenging for the pro. That's why there's clocks. A schedule, a third dimension added to the fun of an organized trail ride. After all, it's a ride, not a race.

Still interested? Well, in this and several following issues of *MOTORCYCLIST* we're going to take you deep into the secrets of enduro riding. From rules and strategy to time keeping aids and borderline cheating.

But first, you've got to have a bike. Most any recent 125, 175, or 250 enduro mount will do. It will need a smaller countershaft sprocket, probably one tooth. Japanese ones run about \$5.00 and slip on in a few minutes if you don't mess up the Phillips head screws that hold the cover on.

This is a good time to look at the old sprocket and determine if the chain will last the ride. If the teeth on the old countershaft sprocket are hooked over, then you'd better go out and get a new chain and rear sprocket too. A worn out chain on a new sprocket will eat the new sprocket in a hurry.

Particularly if you're gonna ride in the East, Mideast or Northwest (any-

place but the desert), you will have to fit genuine knobbys. This is the only way you'll have tire grip to get through the slop. Eight to twelve psi tire pressure helps too. Generally, when you have dropped the tire pressure below ten psi it's wise to fit security lugs so the tire won't spin on the rim, causing a giant tear and ensuing air leak around the valve stem. A popular tire securing method used on bikes with aluminum alloy rims consists of several sheet metal screws run through the sides of the rim and into the beads of the tire. They need only protrude inside about an eighth of an inch.

With the tires and gearing all squared away, you may want to make up a check list to look at a few other things before you take the bike out. After all, if you don't finish, or have to stop along the way and repair it, then the fun's all gone away.

Look carefully at the clutch and brake cables, both ends. If there is some fraying going on or sticky action, just get new cables. The throttle cable is most important. Take apart the throttle assembly and check it very careful-

ly. If there are any doubts in your mind, replace the darn thing. Check oil levels in the engine. Drain and replace the fork oil if you haven't in the last three months. If your forks have had heavy oil for warm weather riding, and winter rolls around, then put in a lighter grade of oil.

Look at the spark plug. If it's got critters living around the electrodes or porcelain, you've got a couple more potential problems. Put in absolutely the proper heat range spark plug, or better yet, one of those expensive platinum Bosch or Gold Palladium Champions. (One \$6.50 Bosch lasts me a full year.) Make sure you're using a good two-stroke oil, properly mixed, if it's a non-oiler model. If the bike's got injection, adjust the pump according to the owner's manual and keep the tank topped up.

Now let's get into the air filter. The hose running to the carburetor has to be air tight. The air filter has to seal into the container at both ends if it's an open end cylindrical type. Some containers are spot-welded together and actually leak at the joint. Plain old Silicone Seal squeezed out of the tube and applied on the inside along these edges fixes it. Always clean the air filter, oil it if it's an open pore foam type. Apply grease on the edge or edges of the filter that fits against the container.

Now this next part takes a little imagination. If you know you're going to get into some water, then there's more to do. Ideally you should want the air inlet to the air filter to be on the dry side of the rear fender just under the seat. Most recent enduro bikes have this and they've done a good job. You can do a similar job using layers and layers of good old silver duct tape. Just try to imagine all the ways water might splash into the mouth of the filter inlet, then block it off with tape. Be sure to leave some way for air to reach the container, preferring to change directions a few times and let it enter through a rear-facing duct.

Silicone Seal works very well around the wires coming out of the cases; smear some on. The mag cover should also be sealed, especially if the bike's got a pointed type ignition. At this juncture, there are two schools of thought. One is to vent your ignition cover and run the vent hose way up over the top frame tube, under the gas tank. The other is to seal it off completely and clean away the condensation that just happens inside the sealed cases each time you take the bike out. (I prefer the latter choice because it allows me the opportunity to clean and check the ignition points.)

Grab a handful of wrenches and go over every nut and bolt to make sure they're tight. If you find a stripped one, replace it. Most enduros allow you to

run a stop light and license plate, some require a working headlight. These are all considerations for running on public roads and should be adhered to. Remember the other guys have got to do it too. Turning indicators, if they are still hanging on, should be hung in the garage if at all possible. Sometimes this allows you to accompany them with the battery.

Now that the bike's ready, are you? Seems everybody knows how to go up a hill, that's because the first time they took their scooter into the dirt they found a hill to conquer. How many turned around and came back down? Enduros have downhills, sometimes hairy downhills. We cannot explain all the possible situations found in the 100-million square miles you can ride a bike. We can tell you to use good sense. If you're on top of a smooth downhill with plenty of unobstructed runout at the bottom, then it's just possible to go down the thing at 100 mph. On the other hand, if it's a rocky-terrible, slimy devil, then it may be best to look for another way. If there is no other way, then try bulldogging the bike down. That's where you grab it by the horns (handlebars), lock it in low gear with everything shut off, dig your heels in while standing off to one side of the bike, and use the front brake and clutch to control the back. If gravity overcomes your strength and the bike's traction, then try and stuff the handlebar into the ground. It usually stops. Remember, you can always get the bike down; the trick is in being able to ride it away afterward.

Another dandy is water. Never go into still water, always choose the rushing water. It looks forbidding but it is safer than the unknown. And that's what a still, dark pool might be. White water breaking over shallow rocks is quite common and there's only one safe way to ride this. Of course you won't look like Jack Panton, but then you won't drown either. That safe way is to sit firmly on the seat, extend a leg out each side a bit and motor across in low gear using quarter throttle or less. The small throttle opening is to avoid drawing water into the air filter.

Mud and mud slots are handled the same way for the novice rider. As he gets better, more sure of himself, he can attempt mud slots with both feet on the pegs, maintaining balance with the handlebars and throttle. As you begin using higher gears, second and third, the balancing act becomes easier, and the falling off chances greater. Mud uphills and downhills are also chancy situations for most riders. Some mud tends to gum everything up while other kinds turn to slime, offering no traction. There is but one trick and this is only if the opportunity is there. Usually a mud trail will have a trickle of water coming down it. That trickle is

heaven sent, there's traction beneath.

In the woods, there are two kinds of fallen trees, big ones and little ones. Little ones present no problem as long as you hit them at a right angle. If you come upon a nice 4-incher lying across your trail at a 45-degree angle, either get the bike turned at a right angle to it or wheelie the front wheel over. If the bike is held straight up and down, the back wheel can usually help itself. Hitting any tree trunk at an angle with your front tire is a no-no.

Now with the big ones it's different. By big ones I mean the four-footers or better found in the Pacific northwest. With these it's every man for himself and usually guys will get off their bikes and help you over because you're in their way. The rule here? Just don't be the last guy in line. Incidentally, this is a good reason for having a nice smooth underside on your motorbike; it will slide over the tree trunk.

The rest is all in getting out there and riding in it. Don't be afraid to go slow and don't take chances. Ride with someone if you can, and take enough tools for course-side repairs. That is, if you break a frame, gearbox or engine, don't expect to fix it on the trail. Get the thing out as best you can. A course-side repair would be slogging back down the trail looking for your chain. Wash the mud off and find out you didn't just lose a master-link, a block parted. If you have a spare block, master links and chain breaker, you're in business.

Condition number two: you lost it in the river and filled the motorbike with water. Tools needed: A plug wrench so you can take the spark plug out, turn the bike upside down, put it in first or second and spin the engine with the rear wheel until it's passed all the water through. You will also need to drop the float bowl from the carburetor and let the water out. Remove the air filter and squeeze the water from it too.

Condition three: no spark. In addition to the plug wrench you used when you dropped in the water, you will need to get the magneto cover off to have a look at the points. You'll find they are either wet or corroded, and an emery board, rag, or whatever will work. Loose wire connections are a good guess, but if the bike was proper in the first place, the wires would stay put. Shorted kill button is also a good possibility, that's why I never fit one on my bike. (In fact I am so consistent in bike preparation that I do not take any tools. Occasionally I will carry a can of tire seal along. In order to play the game this close to your chest you've really got to know your bike and what you're doing.) In short, only take along the tools for fixing something simple because all that iron is just going along for the ride. **NEXT MONTH WE'LL GO RIDE ONE.**



BY DAVE EKINS And so we came to wonder what type of creature Honda had thrust upon us. We're looking at a 175 cc 2-stroke, and Honda has never made one of those. It's got lights but lacks turning indicators and battery. Honda has never made one of those. Both wheels come straight from the CR125 moto-crosser, hardened aluminum alloy rims, security lugs, and Bridgestone knobbys. Honda has lots of those.

Its suspension is also figured to be from the CR parts bin. Maico-like forks whose clever design puts the axle in front of the tubes, leaving lotsa room for the dampers, springs and fluid to do their job. And those slick finned Showa moto-cross shocks, that cushion the big ones and soak up the ripples, suspend the rear.

It's got CR handlebars, throttle, grips and levers. CR's plastic fenders, mud flap and a dinky tail light we've never seen before. The tall fat seat is new and that 3-gallon gas tank too. The engine is a mile off the ground and there's a sidestand to keep the bike from falling down.

The frame is new, the concept is new, yet most of the

engine is not. And here in our opinion is where they missed the target. The source of propulsion is derived from a MT125 and not the CR. The difference? Another gear and bunches more power. But you can omit the power thing, because Honda inflated the 125 fifty cc more.

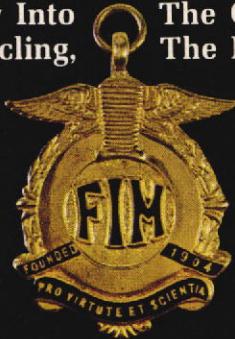
Honda reports engine tune of the MR to be between CR and MT. The MR175 is not as fast as a CR125, but it doesn't have to be. Power doesn't explode like the fly-wheelless moto-crosser. This one's got some flywheel and some pretty decent throttle control but not a broad power band. You've got to keep the thing buzzing with a lot of gearbox stirring to make it go out in the boonies.

And that's the leaky part about the bike. That enduro-like gearbox takes such giant steps when you go from one gear set to the next that if the thing isn't redlined (and there is no tach), it's a gamble on it pulling that next higher set of cogs. Now divide the bottom-to-top gear spread, which seems to be proper, by six instead of five. You've got a winner. The incongruous part about this whole exercise is that Honda has already done it, on the CR.

Looks as though Honda has taken aim at Penton and

HONDA'S GOLD MEDAL HOPEFUL

Honda's Brand New MR175 Joins Their Alphabet Soup Of CB, CL, CR, CT, GL, MT, TL, XL, And XR. With This Many Models You Might Wonder Why One More Is Necessary. The MR Has Wheels From The CR And A Modified Engine Borrowed From The MT. You Can't City Ride It And You Can't Moto-cross It. Is This Honda's Entry Into The Olympics Of Motorcycling, The ISDT?



Try this on your everyday out-of-the-box enduro scooter.

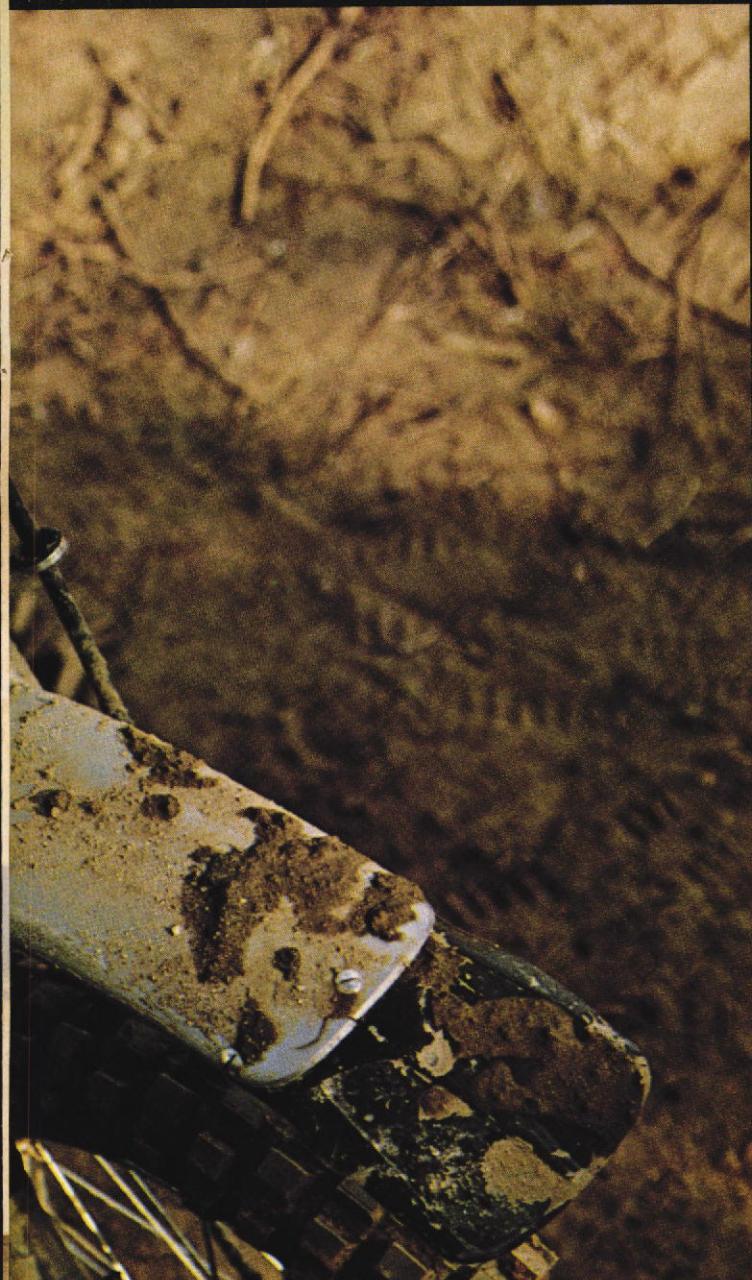
We spent so much time in the water with this bike the rear knobby thought it was a paddle wheel. Conclusion: The MR is impossible to drown as long as you ride it within reason.



whoever else happens to be building a serious small displacement enduro/qualifier. That seems to be the slot into which this MR175 best fits. We say enduro because of the ground clearance, muffler/spark arrester exhaust system and resettable front-wheel-driven speedometer. You noticed we didn't mention the lights. Well that's where the qualifier part fits in. The headlight has a boulder guard, its spacing too wide to protect the lens from flying stones. But it looks trick. The taillight is almost an integrated part of the rear fender, nearly as good as what Preston Petty is doing up there in McMinnville, Oregon.

It's obvious the bike wasn't splashed around in the Northwest mud too much during development because both fenders are on the short side at the back side. The 3.00 knobby has a direct shot at filling the cylinder fins with mud and the back one is just short enough to dirty your coat.

Honda has a habit of making the backs of their fenders too short. They say a longer fender or mud flap restricts cooling. How much cooling are you gonna get with the fins plugged solid with mud? Seems Zundapp has a better idea, they bolt the fender next to the front tire.



HONDA MR 175

We spent a lot of time with this bike in the water, soaking it up real good. At one point of our testing we were running up stream so fast the water force was washing our feet from the footrests. Boots filled up from the tops and that *Motorcyclist* shirt became a sponge. And the MR kept right on running.

Now this is very unusual, especially for a bike equipped with a polyurethane foam air filter. These filters, unlike treated paper, will offer little resistance to water and allow it to pass right into the engine. We didn't have any problems like that so we set out to discover what Honda had done. Their secret is the spot where the inlet system is getting air. The foam filter element is in a sealed container; an elongated hose runs from the top of the container to a point where the dry side of the fender drops below the upper frame tubes. This part of the fender is plastic and has a baffle the seat fits up against forming an enclosure so that water spun off from the rear tire cannot reach the air inlet cavity. There are also some horizontal baffles that per-

form the same duty with the bottom of the seat actually acting as roof and sides of the still air inlet chamber. The theory is not to allow any direct entry to the inlet area. Honda cleverly succeeded in this most difficult task. You would have to get the water level at least to the bottom of the seat if you were to drown the MT.

While on this same damp subject we might talk about how well the brakes work for submarine type ventures. They do. The fit between backing plate and hub is close enough to resist foreign matter and the lining material good enough to squeeze out the water that does get in. We didn't find ourselves making brake adjustments at all during the run, and they were always there. Shoe sizes are the same front and rear, and both are cable operated.

The front is a forward pull type made popular on the moto-cross circuit. A cable operated back brake, like the front, has very good progressive feel and shows no pedal deviation when the swing arm goes up and down.

They've gotten the thing to stop well enough but in some cases they've still got a problem when it comes to making it go. The MR is pretty good in the woods, suspension is soft and steering geometry proper for following a twisty trail among the saplings. But getting the power to the back wheel is sometimes edgy. We mentioned the existing five speeder and that it should have been a six; now here's why.

Honda chose to build a gear set with a whopping 4.054 spread between 1st and 5th. Compare this to their six speed CR125's spread of 2.423, or the

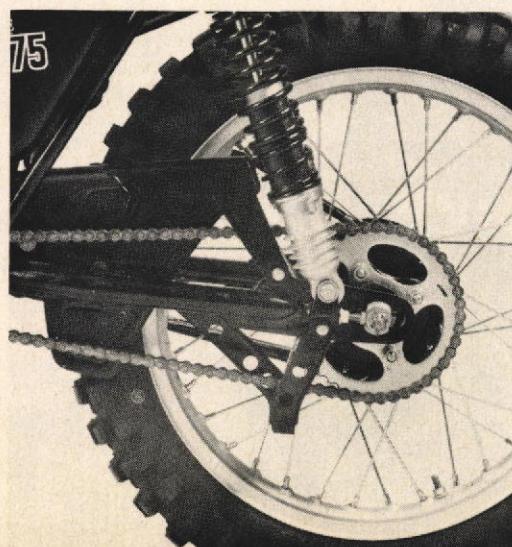
continued on page 90



ABOVE—All-new mild steel frame carries the skid plate 10½ inches above the ground. Tall silhouette gives the impression the MR is short; it has a 54 inch wheelbase which works real well in the woods. 33.5 inch seat height is the killer.

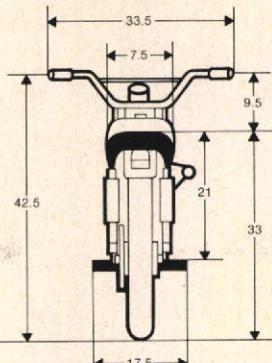
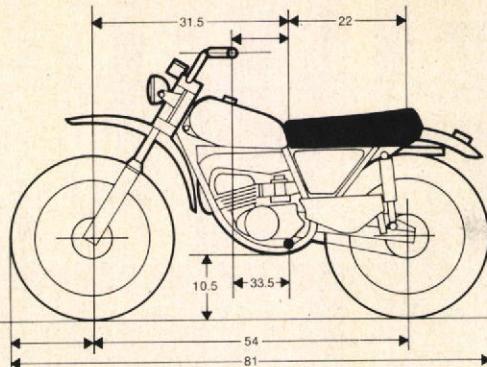


RIGHT—Racing CR shocks and wheel do a super job. Chain guide hangs down too far while metal chain guard is one of few that does the job it's supposed to do.



FAR RIGHT—This whole front end could be from Honda's CR moto-crosser except for the lugs cast into the fork sliders. Although wire guides for the brake and speed cables utilize two of the tapped holes, we would speculate that they are primarily for mounting a fender.





HONDA MR 175

TEST BIKE

Engine serial.....1,000,0689
Base price as tested.....N.A.
Factory warranty.....N.A.

ENGINE

Type.....2-Stroke Piston Port
Single Cylinder
Displacement.....171 cc
Bore x stroke.....66mmx50 mm.
Claimed HP @ RPM.....N.A.
Claimed torque @ RPM.....N.A.
Compression ratio.....6.8:1 Corrected
Lubrication system.....Oil Mist 20:1
Carburetion.....28mm Keihin
Air filter.....Urethane Foam
Oil Wetted

Electrical system.....Magneto Type (Pointed)
Starting.....Primary Folding K/S
Exhaust.....Spark Arrestor/Muffler

DRIVE TRAIN

Primary/ratio.....4:1
Clutch.....Multi-Plate, Wet Type
Transmission/shift.....Left Foot
Gear ratios.....1st 3:1 2nd 1.875:1
3rd 1.300:1 4th .958:1 5th .740:1

Final drive/ratio
(sprocket teeth).....15/43 2.866:1

CHASSIS AND SUSPENSION

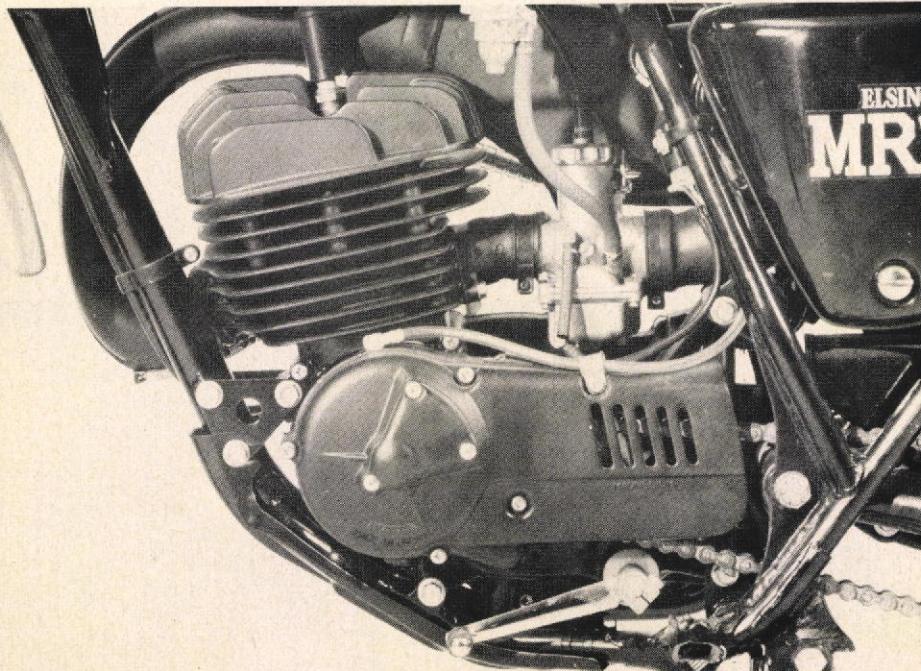
Frame.....Semi-Double Cradle
Suspension,
front.....Telescopic Fork 7.1 inches
rear.....Swing Arm 4.5" at Axle
Brakes,
front.....7.75 sq. in. Drum Type
rear.....7.75 sq. in. Drum Type
Tires,
front.....3.00x21 Bridgestone MX-6
rear.....3.50x18 Bridgestone MX-7
Rim locks, front/rear.....1/2

WEIGHTS AND CAPACITIES

Weight, wet, unladen.....224 lbs.
Allowable gross weight.....N.A.
Fuel capacity.....2.9 gals.
Engine oil.....1.1 U.S. qt.

STANDARD EQUIPMENT

Speedometer.....Yes
Tools.....Yes
Stands.....Side
Passenger provisions.....No



Chocolate brown engine looks much like 125MT. We found shift lever will position one spline up from what's shown in photograph. Another notch and it hits the engine cover before completing a shift. Fat boots won't fit.

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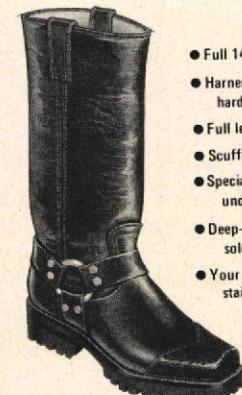
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CAN-AM 250 GP JONES REPLICA



Can Am's latest offering is a carbon copy of Gary Jones' championship machine. And it's available two ways —mild or wild.

By Tony Murphy



Phenomenal. That's the story of Can-Am. In a few short years they've developed a giant killer capable of beating the long-entrenched, big-name manufacturers in moto-cross as well as offering the fastest enduro mounts in the 125, 175 and 250 classes. Now, hot on the heels of their 1974 National Championship win, they are offering a replica of the machine ridden by 250 champ Gary Jones.

Just reading over the specifications makes your mouth water. Weighing just 216 pounds wet, the "GP," as it's dubbed, develops 37 horsepower from the same basic rotary valve engine that powers the entire Can-Am line. It also features oil injection, although the pump has a fixed volume that eliminates the need for a second cable attached to the throttle. Add to this their unique adjustable chassis feature and their established reputation for reliability, and anyone's mouth should water.

While the many features of the Can-Am concept have been expounded in the world press, they are significant enough as it pertains to the GP's performance to be covered once again. Conventional in terms of basic design, the engine excels in subtle refinements, all aimed at improving performance and reliability. It's more than a rotary valve single with the carburetor mounted behind the cylinder.

Rotary valves were in their heyday in the mid-Sixties when literally all Japanese manufacturers competed in the international road race GP's. They were the thing to have, and for good reasons. Variations in both intake opening and closing allow custom-tailored power ranges not available with a conventional piston controlled intake. Unfortunately, when the rotary valve intake is applied to an engine the total width tends to increase, discouraging its use in off-road applications. Or at least it did until Can-Am came on the scene. Their approach makes the rotary valve practical and does, in fact, provide some additional benefits as well.

By placing the carburetor behind the engine in much the same location as a piston-ported version, the intake tract is lengthened, increasing the ram effect of the intake charge. Additionally, the carburetor is well protected, if a little inaccessible, and is easily attached to an air box. Cable routing is easier than on a side-mounted carburetor and the entire package can be clean and uncluttered, as well evidenced by the Can-Am.

The intake tract is also the point at which the fixed-volume injection pump provides the oil for piston lubrication. A separate line carries oil to the right side main bearing, through the crank half to the big end bearing. While unusual for a present day moto-crosser, the use of an oil injection system eliminates the need to premix and, according to those at Can-Am, provides better, more positive engine lubrication.

Much of the engine internals are conventional by today's standards. There are no trick or revolutionary features, although one of those functional subtleties concerns the method of installing the crankshaft main bearings. Rather than pressing the steel bearing race directly into the magnesium crankcases, there is a special sleeve made of a Teflon-like material installed between the steel and magnesium. The material compensates for the different expansion rates and thereby maintains a consistent interference fit—never too tight, never too loose. Such a condition prolongs bearing life and contributes to the extraordinarily smooth running of all the Can-Am engines.

Inside the crankcases, normal full-circle flywheels press together on a crankpin that supports the caged needle bearing in the big end of the connecting rod. The small end also carries a caged needle; all very conventional. The left side of the crankshaft assembly drives the rotary valve, Mikuni injection pump and the straight-cut primary drive gears, while the right side spins the Bosch CDI flywheel magneto. A compact unit, the lower end has vir-

tually the same overall dimensions as the 125 and 175 models.

The left side primary drive has the large multi-plate clutch drum as part of the large primary gear. Throughout the testing it never once needed adjustment in spite of the abuse that the engine throws its way. Its operation was always smooth, even after a few clutch slipping excursions off the beaten path. That speaks well of the clutch since it is much the same as the one used in the smaller machines. If it can withstand the obviously high torque output of a world class 250 racer, it should last forever in a smaller dual purpose machine.

All of the Can-Am 250's are equipped with a five-speed transmission, although the six-speeder used in the 125 and 175 will fit. The sixth gear was felt to be unnecessary due to the wide power range of the larger engine and therefore the savings in weight and additional cost were felt to be beneficial to serious racers.

Atop the crankcase assembly, a large, almost square cylinder and cylinder head complete the package. The cylinder has a steel liner with large, split transfer ports in each side and the rear. The cast alloy piston carries one ring and is available in several oversizes for reboore purposes. Two Champion Gold Palladium plugs adorned the cylinder head of our test model, but the production batch will probably have one plug and a blocked-off second hole suitable for either a compression release or a second plug. Take your pick.

Much of the uniqueness of the Can-Am lies in the chassis. Aside from the fact that it has an adjustable steering head, capable of altering the angle from 25 to 31 degrees, it is designed to be as light as possible and yet rigid. The large diameter top tube carries a full two quarts of lubrication, enough to last for many many motos. Two smaller diameter tubes drop down and underneath the engine, bending around the swing arm pivot and up to the back of

CAN-AM 250 GP JONES REPLICA

the backbone/oil tank tube. Two additional tubes connect the swing arm pivot to the middle of the backbone area. All very rigid. A welded-on subframe completes the package by forming a triangle in which to place the huge airbox.

The swinging arm on the 250 is probably the biggest change that's been made in the Can-Am chassis since it was initially introduced as a 125 and 175. Those first machines mounted the S & W shocks directly over the rear axle. The latest version has them moved about 9 inches forward, placing them almost dead center between the axle and the pivot. The reason is simple; more travel at the wheel. However, the shock longevity problems that such a modification precipitates has forced S & W to develop an all-new shock unit just for Can-Am. Both wheels, a 21-incher up front and an 18-incher in the rear, are comprised of magnesium hubs and hardened D.I.D. alloy rims. Both tires are Yokohama.

The front forks are Betors, but they have been built to Can-Am's specifica-

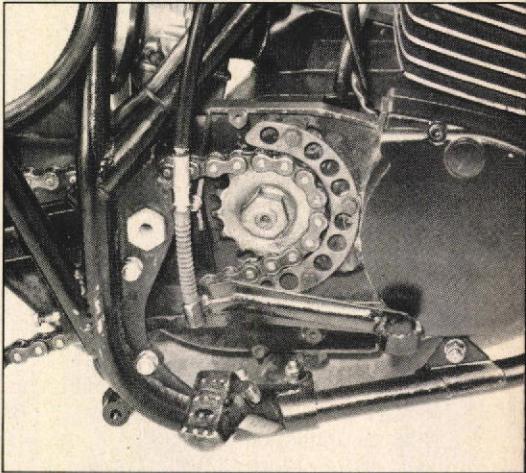
tions and sport a couple of modifications. Both the top and bottom crowns are full of lightening holes, two of which double as guides for the clutch and front brake cables. The fork sliders have also undergone a few passes in a lathe before assembly. All this in an effort to do away with every unnecessary ounce. That's the way you build light motorcycles, not by trying to reduce whole pounds at a time.

The general appearance of the machine is much the same as the other models since the identical fenders, gas tank and seat are utilized. In fact, so are the neat dog-leg Magura levers and quick-turn throttle. One variation involves the Gary Jones-designed handlebars and grips. They feature a cross-bar but it is attached in three places for added strength and bends forward to minimize the chances of the rider wearing it between his teeth.

What's it like to ride the "GP"? How does the average off-road rider react to the kind of power that carried Gary Jones to his third consecutive National Championship? Well, at first it's frightening. It humbles you. Makes you realize that you're not nearly as good as you thought you were. And the thought of the potential physical damage that could result from too much throttle at the wrong time just adds to the feeling of incompetence. Understand this: If

you open the throttle wide open in any of the lower gears with any kind of reasonable traction, the GP will lift the front wheel and just keep on lifting it until both you and the machine are lying upside down on the ground. The trick to riding it is to be able to keep the throttle on and the machine on the ground. Do that and you can rival the younger Jones boy. Maybe.

After the rider becomes capable of predicting the point of front wheel "lift off," and conditions himself to adjust his body weight and throttle opening to account for the tendency to go straight up, the GP begins to feel controllable.



Continually reminding ourselves that the 200 or so GP machines to be manufactured are not being built for us, the weekenders, but for the very serious MX riders in search of fame and fortune, we began to enjoy the several aspects of the machine's performance that we were able to master. Acceleration wheelies are both fun and impressive, particularly with an audience of young riders who frequent places like Indian Dunes, where we did much of our testing and photography. While our lap times were not benefitting from them, we became proficient enough at lofting the front wheel that we often

went out of our way to do it. Useless as such a feat is, it is fun. But fun is not the full intent of the GP, nor the MX2, a very similar but heavier and less expensive model scheduled to follow the GP in a couple of months. They're serious efforts.

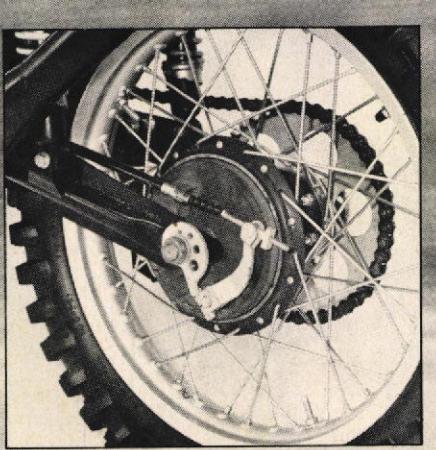
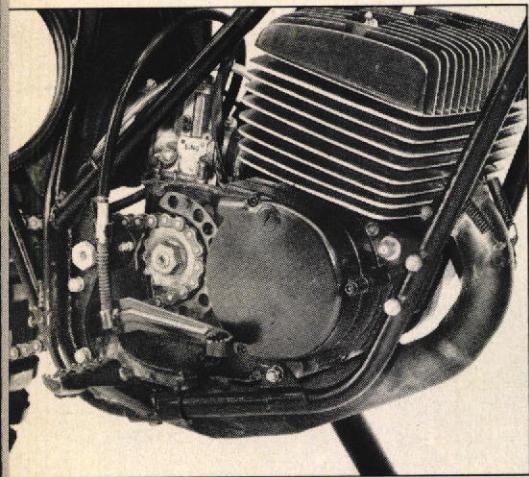
To critique the handling of a machine such as the GP would be presumptuous. Since it is for pros, only pros are qualified to criticize its behaviour. We can offer our impressions and, in one case at least, criticize, but its performance potential has been proven. It handles in a manner suitable for Jones, Jimmy Ellis and Marty Trips.

What we will criticize is the fact that those showoff wheelies come with such ease. The only cure for a rearing machine is to ease the throttle. And that's always at the expense of acceleration, no matter how modern or sophisticated the rest of the machine might be. While we may not offer the

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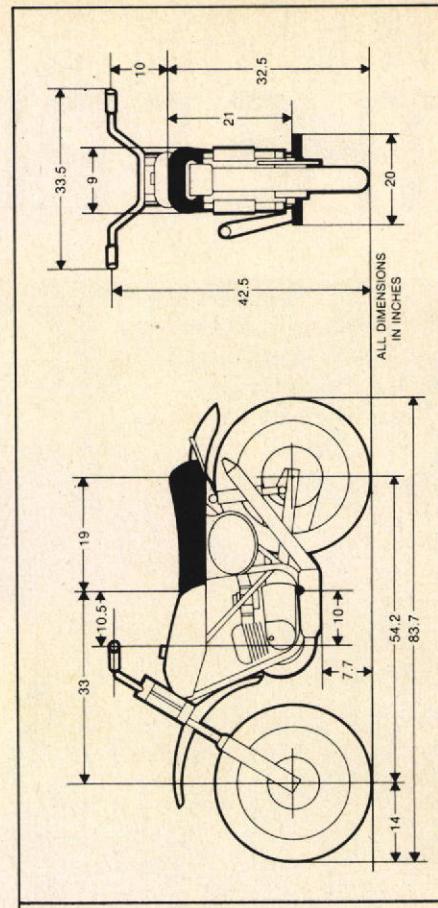
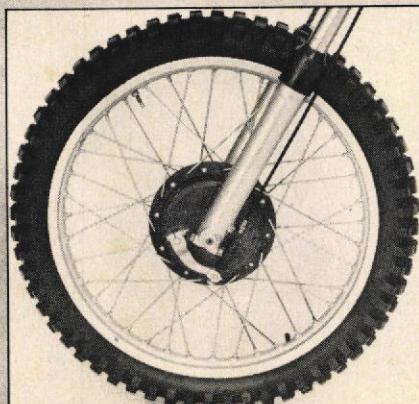
Far Left: Compact engine unit weighs light 56 pounds, develops over 36 horsepower. Note chain guard around the sprocket. Each size sprocket has its own guard to protect crankcases. Left: These two photos show just how well the rear-mounted carburetor is protected. Secondary coil for Bosch mag is up under tank. Downswep

t pipe is vulnerable but out of rider's way.



Above: S & W rear shocks are mounted well up the swinging arm, have 5-way adjustment. Snail-type wheel adjusters are alloy, as is sprocket.

Above Right: Both brake hubs are magnesium, but the braking power could be better. Rims are D.I.D. hardened alloy. Super strong. Right: Front features Betor forks, mag hub.



TEST BIKE: Can-Am GP250

Engine serial.....Gary Jones
Base price as tested.....Approx. \$2,000

ENGINE

Type.....2-Stroke Rotary-Valve Single Cylinder
Displacement.....247cc
Bore x stroke.....74 mm x 57.5 mm
Claimed HP @ RPM.....36 @ 8500 rpm
Compression ratio.....14:1 (uncorrected)
Lubrication system.....Oil Injection (constant)
Carburetion.....32 mm Bing Concentric
Air filter.....Oil Wetted Foam
Ignition system.....Bosch C.D.I.
Starting.....Folding Kick, Primary System
Exhaust.....Downswept Expansion Chamber / Muffler

DRIVE TRAIN

Primary/ratio.....Straight Cut Gears / 2.91:1
Clutch.....Multi-Plate, Oil Bath
Transmission/shift.....Left Foot, Down For 1st
Gear ratios.....1st-2.38:1, 2nd-1.75:1
3rd-1.39:1, 4th-1.09:1, 5th-0.913:1
Final drive/ratio (sprocket teeth).....14/47 (3.357:1)

CHASSIS AND SUSPENSION

Frame.....Tubular Double Loop Space Type With Tapered Backbone
Suspension,
front....."Betor" Telescopic
rear.....S&W Shock
Brakes,
front.....SLS 6" x 1'
rear.....SLS 6" x 1'
Tires,
front.....3.00 x 21" Yokohama Knobby
rear.....4.00 x 18" Yokohama Knobby
Rim locks, front/rear.....1/2

WEIGHTS AND CAPACITIES

Weight, wet, unladen.....216 lbs.
Fuel capacity.....1.9 U.S. Gallons
Engine oil.....2.3 U.S. Quarts

BIKE BASICS: THE PRIMARY DRIVE

All the power in the world is useless unless it is transmitted to the rear wheel. The primary system is the first and most vital link.



by MIKE GRIFFIN

Among the motorcycle's component systems, the primary drive is surely the easiest to understand and the simplest to grasp, at least in theory.

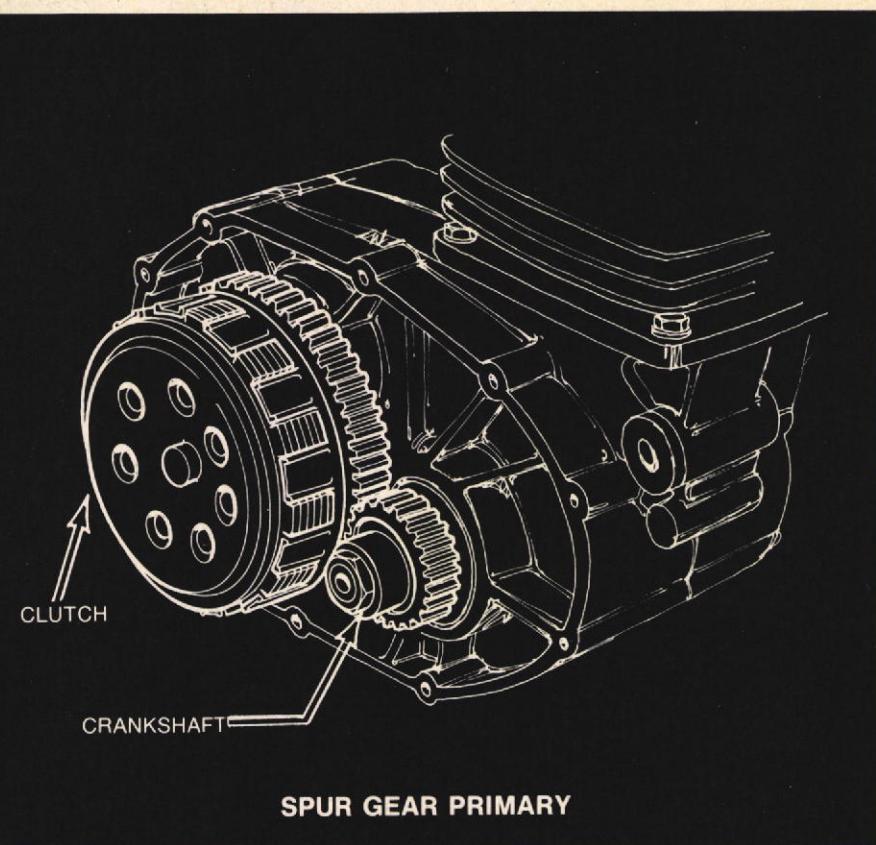
Basically, the primary drive has two jobs. First and most important is to transfer power from the crankshaft to the clutch. The second function is to provide a given amount of ratio reduction and thus torque increase. The latter is achieved through use of different combinations of sprockets or cogs.

Significantly, too, the primary drive, unlike other systems of the machine, has no areas of gray to work within. All is either black or white, on or off. Either it transmits power or it doesn't. For this reason the dynamics of primary drives are easy to comprehend.

There are three basic methods of transferring and magnifying power from the crankshaft to the clutch: gears, chain/sprockets and Hy-Vo chain.

The idea of using a pair of gears for primary drive is not at all new to motorcycles. However, the reason it took so long to attain the prominence it enjoys today was not a matter of surmounting mechanical difficulties. Rather, it was due to the relatively recent sophistication of casting and manufacturing techniques. You see, a geared primary pretty much necessitates that the engine and gearbox be built together in the same housing. This in turn meant a rather intricate casting to keep engine and transmission oils separate, not to mention keeping the crankcase scrupulously tight in the case of two-stroke engines. To boot, the additional machining was both too costly and too slow. As a result, the chain primary drive was the result of manufacturing and economic expediency and it has stayed with us for lo, these many years.

One of the virtues of the chain drive is its adjustability. The engine and gearbox, being totally separate as they so often were, could maintain a reasonably benevolent relationship in those days as long as the chain was adjusted to correct tension. As a result, in practice the engine was usually mounted at a fixed position in the frame while the transmission supports were fitted with slotted holes and adjusting bolts. This system worked well for decades, and so there was little impetus to change it. Before engine horsepower output began to soar about 20 years ago, the single-row primary chain was very much the norm. However, as power grew, so did stress on the primary drive system. Double-, triple- and even quadruple-row chains were used. These chains are just like individual chains but they are made as a unit. Of course, with the growing number of chain rows there must also be an

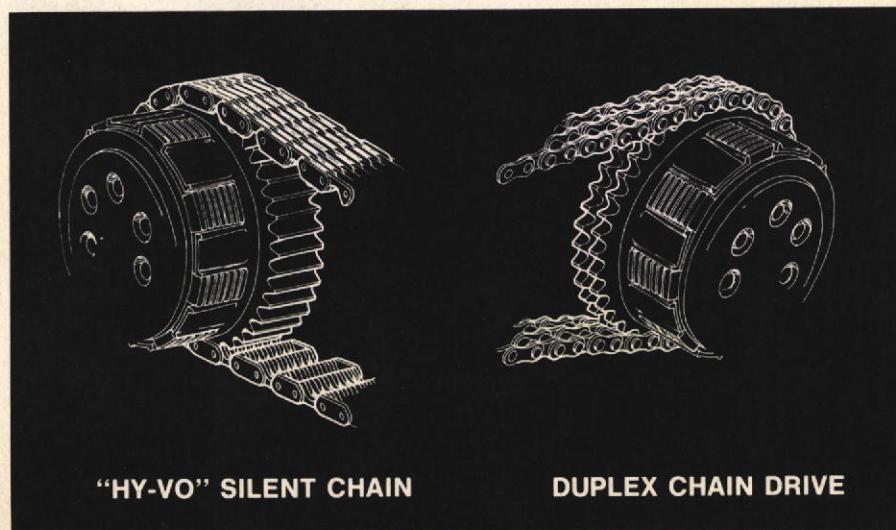


SPUR GEAR PRIMARY



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DUPLEX CHAIN DRIVE

THE PRIMARY DRIVE

equal number of sprocket teeth rows. Besides the chain system's adjustability, it has other advantages. Among them, the chain drive, if properly maintained, absorbs less power in frictional losses than other drive types. In other words, theoretically at least, it is more efficient. However, the use of a chain tensioner here to take up slack will nullify this advantage, and such tensioners are quite common today.

Another plus for the chain drive primary is that it is comparatively quieter than many gear drives, straight-cut cogs especially.

Geared primary drives are pure simplicity. All that's involved is one gear on the end of the crankshaft and one on the clutch. However, as we mentioned earlier, even though it was simple in theory, putting it into practice was another matter. Now, though, with the development of modern wide-spectrum lubricants and the perfection of precision die-casting of structural quality aluminum alloys, most of the machining previously required of crankcases and gearboxes has been eliminated. Today's engines may appear quite complex to some, but in reality they are much less complicated than their predecessors. In this respect, contemporary engines for the most part have fewer components and are easier to assemble than those of past decades.

Among the performance conscious, straight-cut gears are the overwhelming preference due to their lack of frictional power loss in comparison with the more street-oriented helical gears. Straight-cut, or spur, gears are a good deal noisier than helical cogs, but this is of little importance on a competition bike. Spur gears emit a variety of

noises depending, of course, on their clearance, the type of motorcycle they're fitted to and prevailing harmonics. Suffice to say as often as not spur-type primary gears will emit whines and groans much like a dyspeptic meat grinder. This is more often than not an irritant to the ears of the street-going motorcyclist. As a consequence, their use in this area is far from predominant.

An interesting variation of the spur gear theme is found, among others, on the medium-displacement Honda twins. Here, a pair of straight-cut gears is used, meshing with another pair of similar cogs. The trick is that the teeth of the pairs are staggered, or offset. What this does is effectively lengthen mesh time and thus minimize noise. Additionally, the load bearing area is not significantly compromised, so wear and tooth life remain unaffected. Another benefit is that there are no undesirable sideloads generated by this pattern, unlike helical gears.

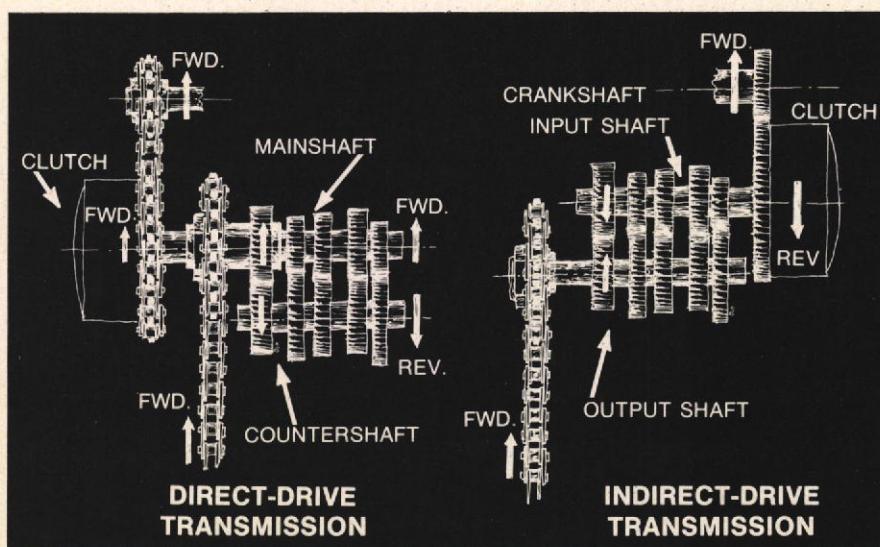
Helical gears, with their teeth cut more or less diagonally across the gear's axis, are favored for their excellent wear characteristics and low noise emission factor. This is due to the wider meshing area offered by teeth. Mesh time is much more gradual than for the spur gear. Consequently, load is spread over a significantly larger tooth area in a longer time span. Another good thing about the helical gear design is that no one tooth is bearing all the load at a given instant, as can be the case with spur gears. What all this adds up to is a quiet, very strong gearset. There is a hitch, however. The diagonally cut gear teeth exert a force mutually repellent to each gear. In other words, they try to slide away from each other. Such a force becomes a lateral push, or sideload, at the gearshafts. This must be taken into account

when designing this type of gearset, with the inclusion of thrust bearings or other suitable precautions.

As a matter of fact, the entire design of a geared primary is much more touchy in comparison with its chain-driven counterpart. Locate the crankshaft and transmission input gears too close to each other and each gear will have to be undesirably small, and thus inherently weaker than need be. Locating the gears too far away from one another means that each will have to be too large. On top of this, these and other more technical decisions must be reconciled with the required primary ratio, not to mention trying not to stray too far from the ideal gear pitch dictated by crankshaft-to-mainshaft distance and necessary allowances for manufacturing inaccuracies. It's a critical business. Where a chain drive can withstand substantial misadjustment, a gearset is much less tolerant and prone to failure if conditions stray from the ideal.

In the early 1960's Borg-Warner's Morse Chain Division scored a breakthrough when it introduced a new, patented variation of the venerable inverted-tooth silent chain. The latter was invented many years ago and saw limited use on motorcycles. The reason it was not used more as a primary drive mechanism was because of its inability to handle high speeds and stresses, otherwise it led a respectably long and quiet mechanical life. The new Morse chain, bearing the trademark of "Hy-Vo," though similar to the inverted-tooth chain, proved capable of withstanding loads and speeds never before attained. The design proved so strong it was immediately put to use in the Oldsmobile Toronado and other automotive applications. In the motorcycle world, Honda was first to take advantage of this unit. It proved ideal for driving the rather distantly located gearbox from the center of the crankshaft on their 750cc fours. Also, a little later the Hy-Vo was offered as an accessory conversion kit for the big Triumph twins as a replacement for the standard multi-row chain. A more recent appearance has been in Kawasaki's later four-stroke twins.

Upon examination of this wondrous development we come away with the conclusion that it combines the best traits of both chain and gear drive. The chain itself appears more like a metal belt than anything else. It is predicated upon a rather closely knit many-rowed assemblage of small-pitched plates. This belt rides upon sprockets all right, but not sprockets as we normally know them. They look more like straight-cut gears with wide, large teeth. Unlike a conventionally toothed chain/sprocket however, the Hy-Vo does not project a



tooth up between rollers. Instead, if you could turn the chain *cum* belt inside out you would see tooth-like projections running across the width of each pitch row. These teeth mesh with the gear-like sprocket teeth. For lack of a better description, the Hy-Vo is reminiscent of an all-metal version of the Gilmer belt.

Provided the Hy-Vo is given adequate lubrication, chain wear rivals that of a well designed gearset, which is to say, it wears only negligibly over a long, long time. Further, the Hy-Vo is probably just about as quiet as any primary drive mechanism can be, helical gears included.

The only significant disadvantages of this drive mechanism are that it is not inexpensive and that there is a limit as to minimum sprocket size with which the chain can live. Using a sprocket of less than 15 teeth or so, for example, causes undue stress and shortens life considerably. So, in this respect, the unit is not what you'd term terribly versatile. Also, it is a good deal wider than even most multi-row roller chains, so it may well require more room in the primary drive department.

... Which Brings Us to the Clutch

For a novice mechanic, the main

hangup in understanding how a clutch works is visualizing its operation. Without the pieces directly in front of him to ponder and fondle, the tyro wrench has it difficult indeed to grasp the principles of clutchery.

You see, like your live-in spinster aunt, the typical motorcycle clutch stays discreetly out of sight, hopefully content in its anonymity. Further, the only time you ever think of either is when they start to act up, as when Auntie gets into the cooking sherry or the clutch misbehaves. Under these circumstances both clutch and relative may well become quite slippery and start making funny noises. Past this point, however, the similarity ends, for while Auntie's boisterousness will subside of its own accord in a few hours, the misbehaving clutch demands curative therapy right now. It cannot get better on its own.

With the advent of the high-winding lightweight motorcycle in the past 15 or so years, the clutch's role in motorcycle performance has become much more important. In the large-displacement low-speed torquer of yore, the clutch was not required to operate at particularly high speeds or dissipate the great heat generated by feathering

a peaky engine at high revs. Generally, engines of that day were very mild-mannered, pulled well at low crankshaft speeds and required little if any clutch slippage. However, today's motorcycle is a vastly different beast often capable of spinning well past 10,000 rpm and producing more than 70 horsepower on the top end. It is the clutch's job to somehow harness all this energy without being destroyed in the process. Additionally, it must smoothly and dependably couple and de-couple powerplant and driveline repeatedly at just a twitch of the fingers. Surprisingly, today's unit does this much and more with ease and safety.

The typical contemporary motorcycle clutch is nothing less than fascinating in its compactness, efficiency and ingenuity. It works like this: there are two basic teams of parts within a motorcycle clutch. Team No. 1 is composed of the gear (or sprocket) wheel, the clutch basket (actually a steel or aluminum bowl about two inches deep which is sometimes called the clutch housing) and the driving plates. The basket is affixed to the gear wheel and the driving plates are located within the

continued on page 70

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...in the dirt



THE PRIMARY DRIVE

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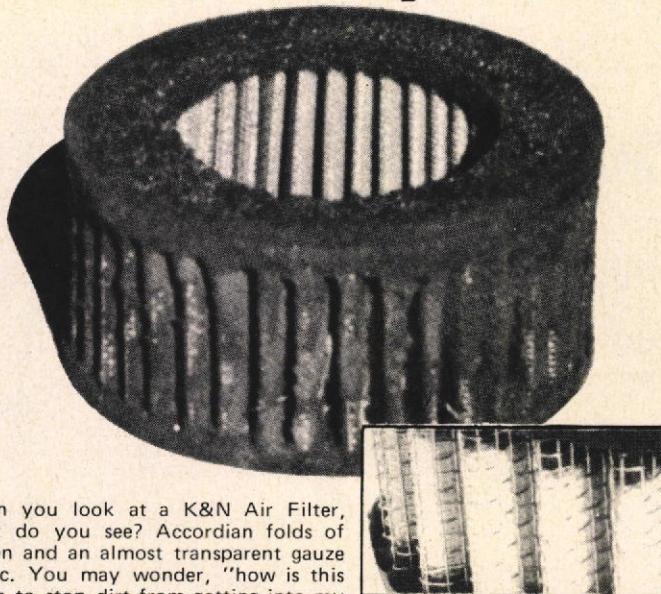
basket. It is the function of team No. 1 solely to take power from the crank-shaft via gear teeth or sprockets. The wheel/basket/plate assembly fits on the transmission shaft *upon which it spins freely*. The assembly rotates on the shaft by virtue of a bushing or a bearing. From the accompanying illustrations you can see that the clutch basket has several wide slots cut into its sides. These slots accommodate corresponding projections radiating from the peripheries of the respective driving plates. Thus, as the gear takes

drive from the sprocket, the basket also drives its plates. This assembly, we will reiterate, spins freely on a smooth portion of the transmission shaft. It is powered by the engine; it spins as the crankshaft spins. Some clutches are mounted on the end of the crankshaft and thus rotate at the same speed although most of today's units are located on the transmission mainshaft. As a consequence, the latter are driven by a primary drive utilizing gears, chain, or the Hy-Vo gear-type chain.

Team No. 1 is the driving half of the clutch assembly. It drives team No. 2 which is located right next to team No.

continued on page 74

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17. Adjust clutch



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THE PRIMARY DRIVE

continued from page 70

1 on the transmission shaft. How is this done?

Well, remember that we emphasized how the driving team spins freely on the shaft? Immediately adjacent to the smooth part of the shaft that the driving assembly spins upon, the transmission shaft is splined. It is around this spline that team No. 2 is headquartered. So, for the time being, let's take the clutch wheel/basket assembly and fit it onto the shaft, pushing it all the way back to the smooth portion upon which it spins. In other words, this

area is just inboard of the splined end of the shaft. Also, for the time being let's forget about it while we delve into team No. 2, the *driven* part of the clutch.

The clutch hub is what receives driving power from the clutch plates and feeds it into the transmission. The hub, you see, is much like a rather large, wide gear. It has splines on its outside diameter. These splines receive torque from the driven plates which fit over the hub. The plates are toothed on their inside diameter to mesh with the hub's outside diameter splines. In most designs the hub fits onto the shaft within the bowl-type confines of the clutch basket.

At this point, let's briefly recap what we've discussed. The driving part of the clutch, team No. 1, spins in direct conjunction with the engine. Were it not for the friction between the driving and driven discs there would be no transfer of torque at all; the basket would just be rotating weight on the transmission shaft. Team No. 1, in other words, moves only at the behest of the engine. On the other hand, team No. 2 moves only with the transmission shaft. Team No. 1's plates take their power through their fingers that project through slots cut in the side of the clutch basket. Team No. 2's plates look much like the plates of team 1 except that the latter have no fingers on their outside diameter. Instead, they have teeth cut into their inside diameter that drive the hub.

When the driving and driven plates are pressed together, engine torque is delivered to the transmission input shaft, which brings us to the pressure plate.

The pressure plate's job is to provide a clamping action sufficient to keep driving and driven plates snugly together so they won't slip in relation to each other. For when slippage occurs, torque is not transmitted; the clutch basket and its plates just fruitlessly spin.

In assembling a clutch, the parts will go together something like the following. The basket fits on the smooth part of the shaft. The hub fits on the splined outboard remainder of the same shaft. Now come, in alternating order, the clutch plates—driving, driven, driving, driven, and so on. At the far outside of the clutch assembly is the pressure plate.

The pressure plate is the only full plate in the entire clutch. It must not only extend to the periphery to clamp the flat, ring-like driving plates, but it must also cover the center of the hub where the plate can be engaged by the springs.

Springs are employed in a somewhat inside-out manner to achieve plate compression. In other words, compression springs are used to "pull" the pressure plate inward against the driving and driven plates. This is done by using long threaded bosses or studs, one for each spring, projecting from the hub recess. The central area of the pressure plate has a series of deep cups corresponding to these bosses. The cups have holes in the bottom and pass over the bosses when the pressure plate is installed.

The springs are assembled into the cups, over the bosses, and seat on the shoulders at the cup bottom. The springs are longer than the cups are deep and protrude beyond the outer surface of the pressure plate. Bolts, with washers large enough to seat against the ends of the springs, are

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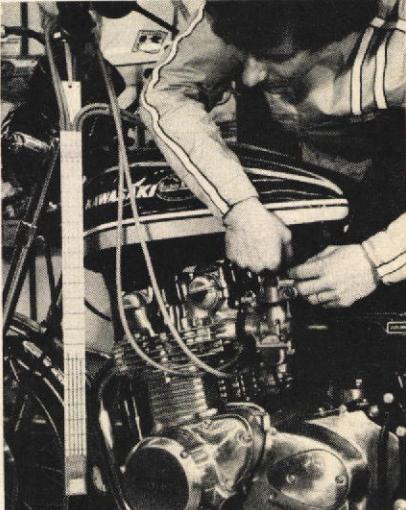
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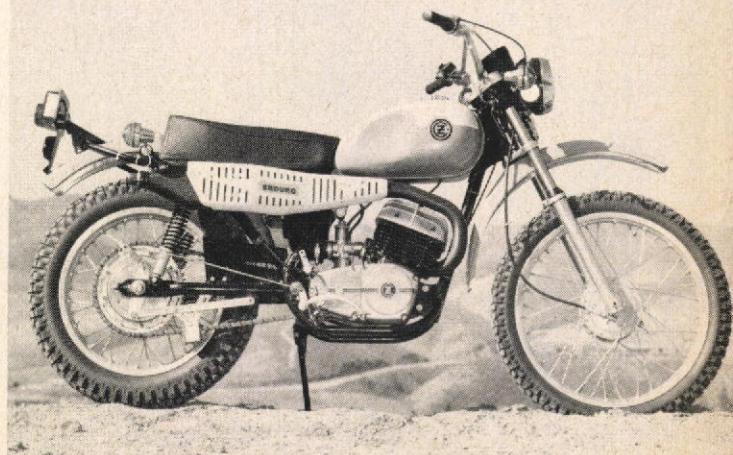


By Dave Ekins

Hey! I just saw a street-legal 250cc CZ enduro bike and you wouldn't believe the price! \$1060 and it ain't no cheepo either. It's an enduro version of their superb moto-crosser. I just can't believe a full European enduro bike for less than all but one of Japan's most popular 250s.

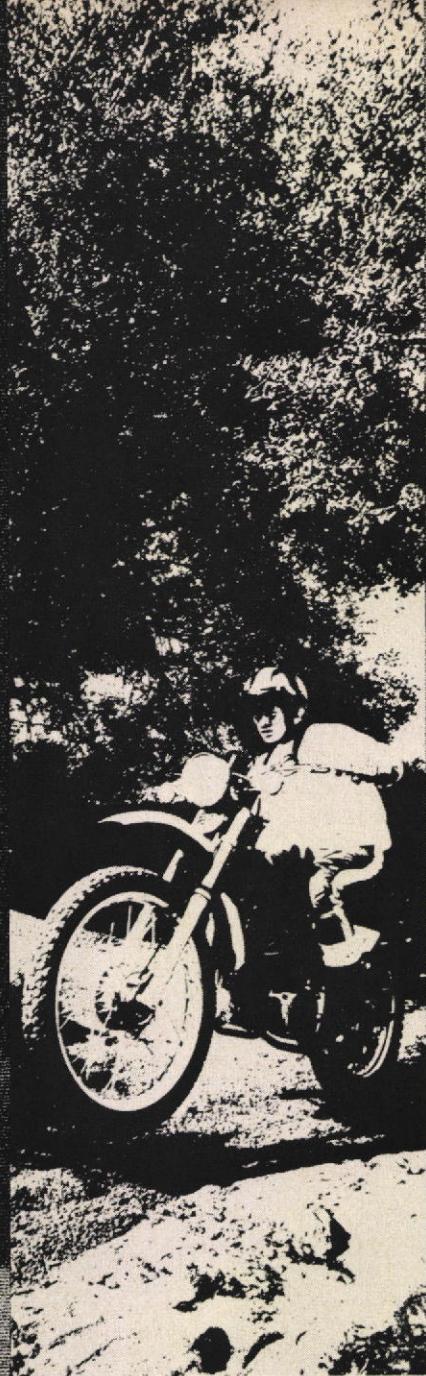
Now let's take a step back and look into this thing more closely. Most people make the grave mistake of combining Jawa and CZ. I used to, until I mentioned CZ in the Jawa factory and got a gentle rap on the head. CZs are made in Strakonice, some 50 kilometers away, I was told.

Currently Jawa owns the world in ISDT competition, the pinnacle achievement for enduro machinery. CZ has concentrated its efforts in both classes of world moto-cross G.P. racing. I've seen some CZs in ISDT com-



Overall impression of the bike is pretty good. It has some features the Japanese aren't even close to; fenders and rear shocks that work and a chassis right from the MXer.

CZ POWERSLIDES INTO JAPAN'S MARKETPLACE



petition; they belonged to the U.S.S.R. Silver Vase Team. I've also seen some Jawa moto-crossers, one-off works bikes. As a rule CZ makes moto-crossers and Jawa makes enduro and street motorcycles. All machinery exported from Czechoslovakia is the responsibility of Motokov. Jawa and CZ are imported and distributed in the U.S. and Canada from under the same roof. Retail dealerships also combine the two marques. There is one distribution point in Canada, one on the East Coast of the U.S. and another in the West.

CZ had built another 250 enduro just a couple years ago; it bombed. Your leg kept hitting the ill-placed battery and the horn fell off, among other things. CZ picked up the pieces, did most of their homework, and returned with a whole new motorcycle.

Close scrutiny of the orange and yellow (yes ORANGE and YELLOW) bike brought out many interesting details. It's in the well respected mild steel moto-cross frame used right up until long rear travel came into vogue. A full plastic moto-cross front fender that does work covers the front tire while mounted under the lower triple clamp. Tires are a universals that work well in either on- or off-road situations, although there is no substitute for knobbies in mud, slop; and gumbo riding.

Front wheel hub is brand new on this bike; it's a two-piece aluminum casting bolted together. There is an iron liner and forward-pull, single-leading-shoe brake. The backing plate is a close fit to the hub, warding off incoming crud, and both wheel bearing sets carry additional seals. A speedo drive is fitted to the other side.

CZ's fine moto-cross front forks offer 6.7 inches travel, hydraulically damped in both directions. The spring is a constant-wound type as opposed to progressives found on many other bikes. We felt these springs to be a bit soft because with the bike just sitting it used up 2 inches of travel. Also they are not strong enough when you compare them to the more properly sprung rear suspension units. Each leg is filled with 170cc of thin fluid that also serves to lubricate the bronze bushes within the sliders. Extensive machining has been done to the aluminum fork sliders with extra meat allowed at the bottoms and brake anchor areas. They carry a double-lipped seal and wiper.

A mild steel tubular frame of the closed type is used. That means it's all welded together, no "openings" where bolted parts fit. The frame is forked un-

der the seat and in front of the engine to allow for a wide mounting of the swing arm pivot. It carries the engine very low. If you lay a straightedge from axle to axle, you will find crankshaft and transmission shafts are all intersected by that same line. Compress the suspension and the engine drops below center. This is one of the reasons CZs corner so well.

The seat is extremely light weight. It is very comfortable, maybe even too soft, if that's possible. It is leatherette over foam fastened to a fiberglass base. A single 13mm fiber lock nut holds the seat, allowing quick accessibility to the battery and air cleaner.

Most interesting is the rear fork which rides on bronze bushings in an oil bath. The pin is hollow and filled with motor oil. Compare that feature to those Japanese plastic bushings.

Rear shocks are rebuildable telescopic type with 3.5 inches of travel. The outer cylinder acts as a reservoir and contains an inner cylinder in which a $\frac{1}{8}$ -inch diameter piston runs up and down. Each side takes 60cc of hydraulic fluid. The springs are constant-wound and seem to be about 80-pounds. There is no spring adjustment offered.

Much of the CZ's good handling can be attributed to the low unsprung weight factor. Both the 21-inch front and 18-inch rear rims are hardened aluminum alloy of the non-lipped variety. There are no security lugs, at best a weight savings, and the rear hub is the conical moto-cross type.

This is an interesting piece because CZ kinda' paved the way for conicals. The hub itself is an electron casting with a double set of bearings under the drive side and a single set at the other end. Both ends of the hub carry neoprene seals to ensure long bearing life. A machined steel brake liner is riveted to the alloy hub which the drive-side spokes fit to. And in this case, an aluminum alloy sprocket bolts to the steel drum. The brake backing plate has a labyrinth fit to the drum in an effort to keep the rear brake shoes clean and dry. We found this bike would stop particularly well after running around in the swamps.

We did have a slight problem with the air filter taking water. Most Six Day bikes carry a leatherette cover that goes around the carburetor and air filter. The air filter was designed for such a cover but somewhere along the line they decided not to install it. The air filter container draws air upward through channels on the outside and drops it into an open-pore-foam polyurethane filter. When you hit a stream, hard water from the front tire bounces off your boots and gets funneled right

at the filter. The cover would eliminate this. A paper air filter would help.

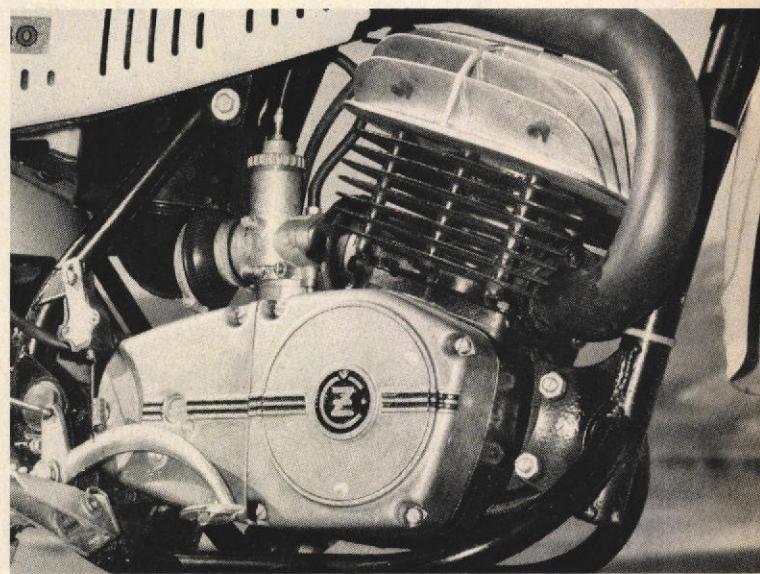
It won't win any awards for good looks, but then the Czechs just don't build pretty motorcycles. They are all very functional. The 2.8-gallon gas tank is a totally rounded affair that just doesn't go with the square-sculptured fenders, like the cobby engine cases and rough cast cylinder fins. The bike is a moto-crosser turned streeter.

Lucas of England supplies the electrics. You may ask why, and the answer is really a lesson in economics. Lucas electrics have all the U.S.A. approvals. They are not expensive for the Czechs to buy, they are available and good. All the lights stayed on while we rode the bike, a turning indicator bent its mount when we tossed the bike away. The taillight bent itself up when we looped the bike and though we

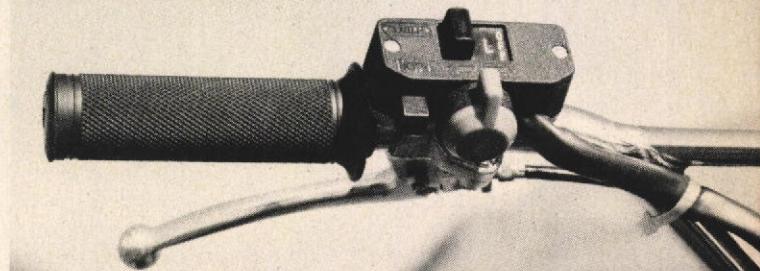
brought it back looking all crooked and twerked, the blinkers still blinked and the rest illuminated well too. Another lesson learned is to remove the turning indicators and either reposition or replace the taillight before taking the bike trailing. Some cops may wrinkle their brow in displeasure, but that's the way it goes.

It carries a high pipe in true enduro fashion. The pipe does catch your leg when you stand up to drop the bike off a cliff. While in the sitting position you'd never know it to be there. The pipe is not a true MX expansion chamber and this is where some of the HP has gone. Another factor is the 29mm Jikov carburetor; it doesn't flow as well as the bigger unit the MX bike fits. Finally, the radial-finned enduro cylinder head packs less compression.

But make no mistake, it is mostly the



RIGHT-Engine gets 24 torquin' hp @ 6750 rpm. 70/64mm piston port job is moto-crosser with different gearbox, less compression, and has muffler/carburetor change. Rubber dowels in fins are to silence piston clatter.



RIGHT-Switching box is not the small integrated package you'd find on most Japanese bikes. It operates both headlight beams, turning indicators, and horn.



RIGHT-Exhaust pipe outlet has stinger insert wrapped in glass.



FAR RIGHT-Correct frame geometry plus Barum trials tires allows superb powerslides.

MX engine. Six 8mm bolts hold the head to the cylinder with a thin aluminum gasket for seal. The cast-iron-lined aluminum cylinder is held to the cases with four 8mm studs. The forged aluminum piston fits two thin rail-type piston rings and connects to the rod with a full floating piston pin. The connecting rod is a lightweight steel forging fitted with rollers at the big end.

The crankshaft is a built-up assembly riding in a double set of bearings on the magneto side, and two widely spaced single ball bearings on the drive side. Both sets of main bearings carry their seals on the outside.

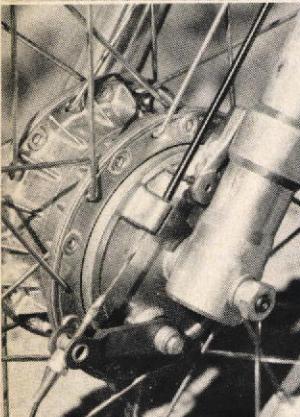
The ignition system is an "inside out" rotating magnet flywheel that affords easy adjustment of the points.

Primary drive to the clutch is by straight-cut gears. CZ uses a dry multi-

continued from page 89



LEFT-The CZ is a slim looking package from the rear if you can picture it without turn-indicators. They are also the first to go if you happen to drop the scooter.

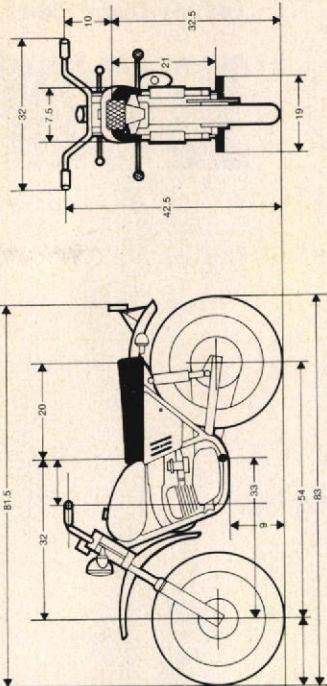


LEFT-Strange looking front hub is new with this bike. Front pull single leading shoe brake works good, even after you get it wet.



LEFT-That's an MX wheel with non-lipped hardened aluminum alloy rim. Everything is trick except the chain guard; it's too short to keep mud off the chain.

ALL DIMENSIONS IN INCHES



TEST BIKE

C Z Enduro
Engine serial..... 988-2001142
Base price as tested..... N.A.
Factory warranty..... N.A.

ENGINE

Type..... Single Cylinder 2-Stroke
Piston Port
Displacement..... 246 cc
Bore x stroke..... 70x64mm
Claimed HP @ RPM..... 24 @ 6750 rpm
Compression ratio..... 9.5 to 1
Lubrication system..... Oil Mist
Carburetion..... .33m.m.
Ignition system..... Flywheel Magneto
Electrical system..... Rotating Magnets and 6v. Battery
Starting..... Kick-start-Neutral
Exhaust..... Chamber/Muffler and Spark Arrestor

DRIVE TRAIN

Primary/ratio..... 23/53 (2.3061)
Transmission/shift..... Down for 1st. Left Foot
Gear ratios..... (Internal) 1st-3.11:1 2nd-1.92:1
3rd-1.46:1 4th 1.17:1 5th 1.00:1
Final drive/ratio (sprocket teeth)..... 17.52 or 18/52 or 19/52
Bike as tested 15/52 (3.467)

CHASSIS AND SUSPENSION

Frame..... Double Cradle with Single Down Tube
Suspension, front..... Telescopic Fork 170mm Stroke 7" Travel
rear..... Hydraulic Shock/Swingarm 90mm Stroke 3.54" Travel
Brakes, front..... 125mm 4.92" Dia.
rear..... 180mm 7.08" Dia.
Tires, front..... Barum Trials 3.00x21
rear..... Barum Trials 4.00x18
Rim locks, front/rear..... NO

WEIGHTS AND CAPACITIES

Weight, wet, unladen..... 267
Fuel capacity..... 2.8 gal.
Engine oil..... 8 qt

STANDARD EQUIPMENT

Speedometer..... Front Wheel Driven No Trip
Tools..... yes
Stands..... Side Stand
Passenger provisions..... no

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HOW TO RIDE

Text by Dave Ekins, Senior Editor

NON-JUMPING

It's Not How High You Get, It's How Fast You Go.

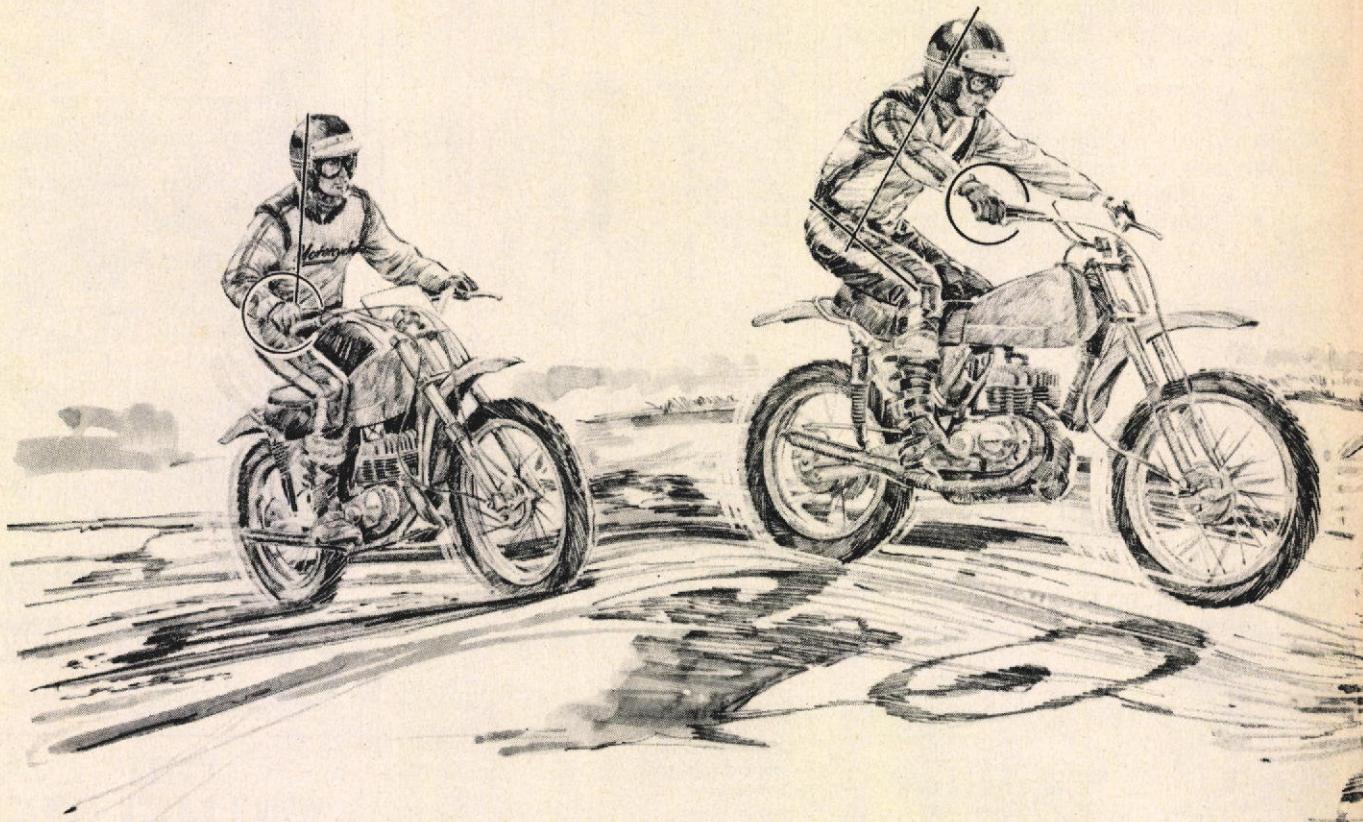


Figure 1

Figure 2

Take 30,000 spectators standing in a cow pasture, well bundled against the cold and give them something to shout about. Aside from soccer, the spectacle of moto-cross will do it in Europe. Why is this?

It's a circus. There's color, ceremony, competition, and excitement. In a sense moto-cross racing is an update of ancient jousting matches, men in armor on horseback trying to knock each other on their collective arses. The last one standing is winner of the Queens' hankerchief.

Moto-cross is not a whole lot different, except the competitors are smart-

er. They know that knocking each other from their scooters may bring the crowd to its feet, but trips to the hospital would soon soak up their profits.

In an International event each rider is a hero. He is introduced with the raising of his country's flag, wears his nation's colors, and those of his sponsor. The crowd not only braves bad weather, but also parts with money to see all this. The entertainers are there for the money too, and the promoters pay them to make the starting line with the stars and the crowd pleasers getting more than the also-rans.

In the beginning Roger DeCoster

was an also-ran. All champions started out as also-rans; they didn't just jump on a bike and blow everybody off the racetrack. But Roger was smarter than the rest and devised a stunt we in America call the "European." This is the one where he gets the bike all crossed up while sailing through the air. It's always good for at least 1,000 gasps in the U.S. and a round of applause abroad. It got Roger extra starting money. The execution of the stunt according to Roger himself wastes time and is taking a chance you needn't take. "In fact," says Roger, "too many riders jump too much anyway."

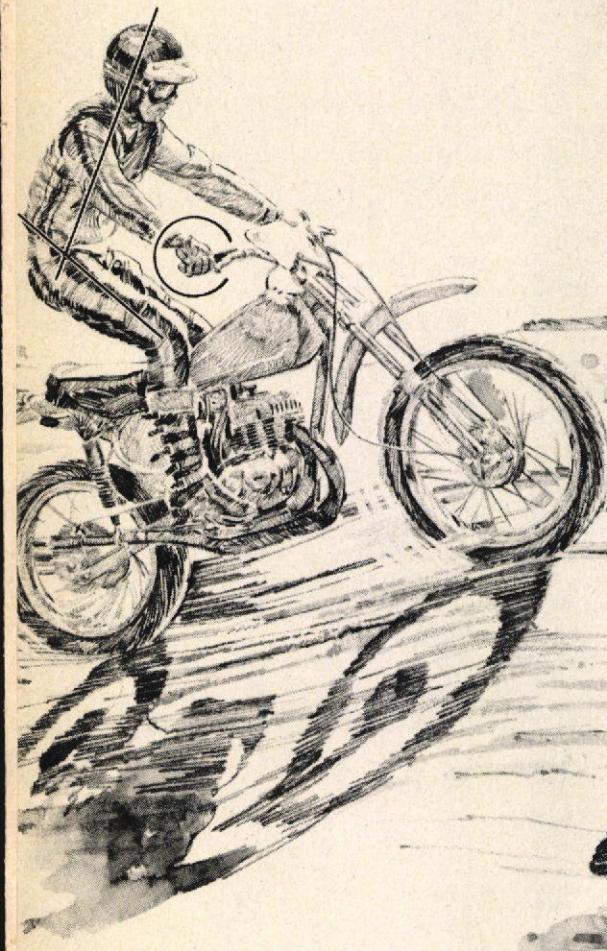


Figure 3



Figure 4

DeCoster will occasionally resort to his old trick when he is way out in front or just killing time coasting around the race track. The "European" was devised to make money, not win races.

You see, if you spend all your time up in the air, how is the rear tire going to help you go forward? Thin air offers little bite for knobbies. A race course has got to have places where you get airborne; if it didn't it wouldn't be a crowd pleaser. Guys jumping handlebar to handlebar, some passing others while in mid-air, it's exciting to watch but, it doesn't win races.

To jump or not to jump all depends on the kind of bumps you are going to be racing over. There are obvious places on the race track where getting the bike off the ground is faster than crashing through a gully. Then there's the jump you gotta take or get passed because you shut off. Most notorious of these is the big downhill at Carlsbad. A 100 yard downhill with a ledge mid-way, the good racers sail off at about 70 miles per. Now what about the other jumps, the time wasters.

Getting airborne off one jump and landing on the upside of the next could mean that the direction of your travel

is perpendicular to that of the course at the time of impact. Which means you'd have to start your forward motion all over again.

The quick way over this situation is non-jumping. The secret is to approach the crest of the hill at a reduced speed so the bike doesn't get in the air when the ground drops away. (fig. 1) As the bike starts over the top use the rear brake and shut the throttle off, (fig. 2) this forces the front wheel down. Get on the throttle to accelerate down the hill, (fig. 3) and up the other side. (fig. 4). So we jumped the rise, then began braking for the upcoming turn. •

MC BUYER'S GUIDE: ENDURO JACKETS

Protective tops for road riding



YAMAHA

Made of a blend of antron and nylon, the Yamaha all-weather riding jacket features six pockets, a two-way front zipper, fully adjustable belt and a rear ventilation flap for flow-through ventilation. Zip-in pile lining can be quickly removed for warm-weather riding. Collar and cuffs close with Velcro. The dark navy blue jacket with contrasting yellow stitching is machine-washable and available in sizes small, medium, large and extra-large.

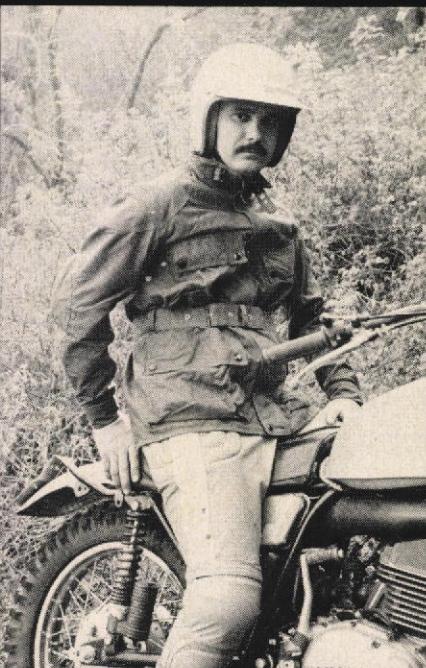
Enduros, because they take place in all types of weather and all types of terrain, require versatile protective clothing. Jackets and pants must be able to protect a rider from the cold, the wind and the rain, as well as more solid obstacles like rocks and tree branches. The jacket must also act as a carry-all, often becoming your tool bag and accessory holder—a convenient place for spark plugs, gloves and goggles.

Most of the jackets available today are versions of the "Barbour" jacket, originally adapted from a line of English hunting clothes. Most commonly made of waxed cotton for water repellence, enduro jackets are also being made of nylon fabrics to take advantage of nylon's great resistance to tearing by thorns and rocks. The jacket pockets should be large and accessible, and able to be closed securely to keep your belongings in and dirt and

water out. At least one zippered pocket is worthwhile to keep valuables.

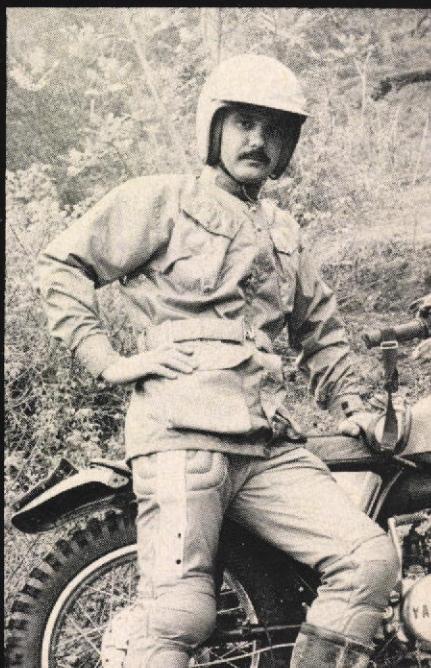
The jacket should fit closely enough to keep unwanted air from entering in order to maintain body heat when necessary, but not so tight as to restrict full movement of the arms and upper body. Pleats, called "action" pleats, are often added to the back of the jacket near the shoulders to ensure maximum arm movement; zippered or snap vents may also be offered to help control air flow and temperature inside the jacket. Built-in belts are commonly used as devices to control air entering from the bottom of the jacket, while velcro or snap closing cuffs control air flow up the arms (velcro has the advantage of greater adjustability).

It is not our intent here to pass judgment on the different jackets available, since each rider has his personal requirements, his own likes and dislikes. We only wish to give you a sampling. •



HAP JONES

San Francisco, California
Imported from England, the BELSTAFF Trailmaster Professional jacket is manufactured of fully waxed cotton cloth which is said to be completely water-, thorn-, rot- and fungusproof. The jacket features four flap-covered pockets, a corded velvet-lined collar with buckle closure, and reinforcement patches. Colors are red, green and black in sizes 34 to 46.



MALCOLM SMITH

Riverside, California
Tested in the Baja 1000, the GOLD MEDAL riding jacket is made of waterproof nylon, and features ISDT-type pockets, Velcro fasteners on the sleeves, collars and pockets, large zippers and a fully adjustable belt. Machine-washable, the jackets are available in sizes small, medium, large and extra-large.



HONDA

The HONDALINE enduro jacket is made of 100 percent nylon and features four outside and one inside pocket; all outside pockets offer both snap and Velcro closing. The front closes with a two-way zipper and snaps and has a Velcro closure at the neck. The elbows are padded and the cuffs close with Velcro; the belt is fully adjustable. Available in navy blue only in sizes small, medium, large and extra-large.



GRAND PRIX PRODUCTS

Laredo, Texas

The DYNAMITE DENIM enduro jacket is made of closely woven cotton denim that has been fully waterproofed with natural oils, and features six outside flap pockets and one inside zippered pocket for valuables. The jacket is lined and has both zipper and snap-closing front. Colored in the popular faded denim look, it is available in small, medium, and large sizes.

continued on page 85

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ENDURO JACKETS

continued from page 83



HI-POINT ACCESSORIES Sacramento, California

The No. 551 Hi-Point jacket is sewn from a closely woven, chemically treated fabric that is water-resistant and thornproof; the inside is nylon-lined. There are six pockets (one zippered), an adjustable belt, lined collar with buckle closure and adjustable snap-closing cuffs. The jacket is offered in red and blue, in sizes small, medium, large and extra-large.



J&L ACCESSORIES San Jose, California

Made of an extremely tough material of woven nylon with a plastic coating of the back, the LUJA jacket is weatherproof and tear-resistant. It features an adjustable belt, slanted top pockets for easy access and Velcro closures on the collar and cuffs. The jacket is available in red, blue and black in sizes small, medium, large and extra-large.



ROYAL INDUSTRIES/GRANT City of Industry, California

Made of 100 percent oxford nylon, this lightweight jacket is weather-resistant and features one zippered outside pocket, elastic belted waist at the rear, front zipper and padded elbows. Available in gold with black/white side stripes or blue with red/white stripes, the jacket is available in boy's sizes small, medium and large, and men's sizes small, medium and large.



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THE HEADPROTECTORS



CAN-AM 250 GP JONES REPLICA

continued from page 65

cure for such a condition, we are aware of the cause. And it may be one that could have been avoided.

The year 1974 was one of the suspension travel race. Everyone attempted to get more movement out of front and rear wheels than the competition. In so doing, the machine's mass, all that between the wheels, had to be elevated in order to keep exhaust pipes, frames and footpegs from grounding when the additional built-in wheel travel was all used up. Consequently, machines like the GP wound up with lots of ground clearance and the result was a high center of gravity. Under the fierce acceleration that the engine is capable of, the machine is easily pivoted about the rear axle, particularly when the front wheel is given the boost of climbing a grade or negotiating a series of fast bumps. It's about the only negative that can be hurled at the GP, and not one that is overly critical when you consider that a combination of high horsepower and light weight does, inevitably, bring about a point at which the engine will overpower chassis control.

Most of our feelings of potential "overpowered" situations came about during our play sessions, a time at which few maneuvers are predetermined and the next turn or action is decided just prior to its execution. Under racing conditions, on a known course, few actions are based on reflex, minimizing the probabilities of too much throttle at the wrong time.

However, practice would take on a good deal more importance with the GP than with an ordinary machine. Not only would a rider have to show concern for the track itself, but he'd have to program the engine's response to each situation. The GP is a machine that few riders can ride on reflex alone. Things just happen too fast.

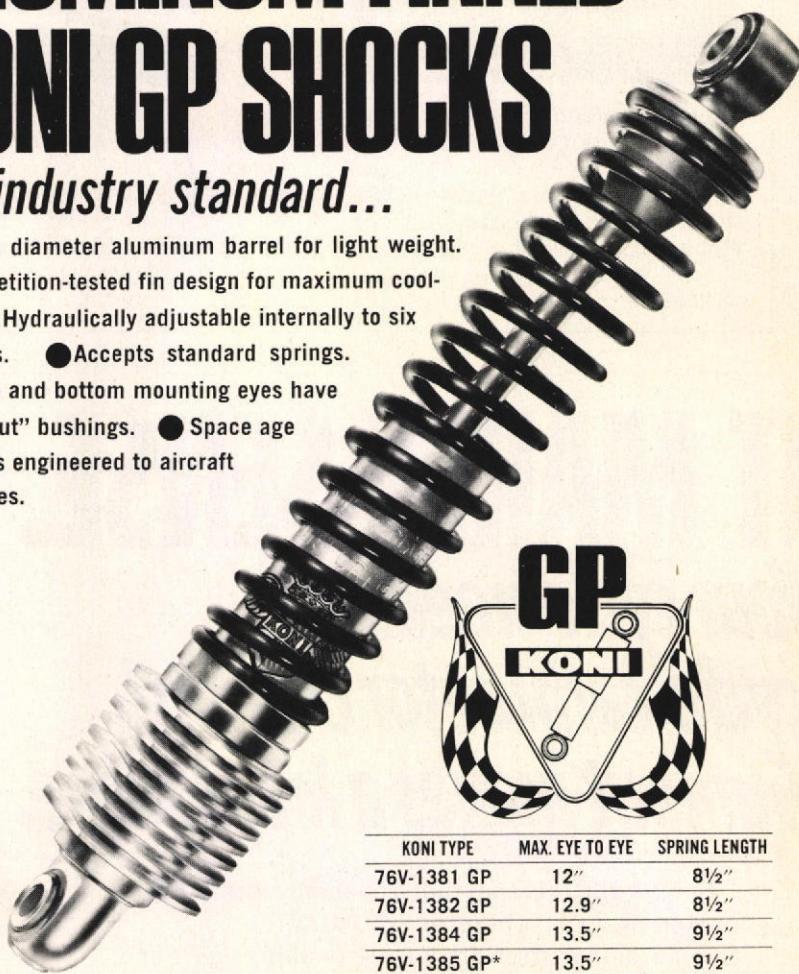
The MX 2 is another matter entirely. Slightly detuned, with "only" 36 horsepower, and carrying a few more pounds in total weight, it boasts a wider power range and therefore a more controllable power delivery. Aware that there are only a handful of super-aces like Jones and Ellis, Can-Am felt that a milder machine would better serve the riders with less experience, perhaps preparing them for a GP later on. A smart move, it enables them to produce the MX 2 in larger quantities and therefore keep the price competitive. As it is now, the GP will be in the \$1900-2000 range while the MX-2 can be had for \$1595. In either case, the value depends on how bad you want to win. Can Am has proven they can do it. How about you? •



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KONI TYPE	MAX. EYE TO EYE	SPRING LENGTH
76V-1381 GP	12"	8 1/2"
76V-1382 GP	12.9"	8 1/2"
76V-1384 GP	13.5"	9 1/2"
76V-1385 GP*	13.5"	9 1/2"

*For Maico, Penton and similar suspension.

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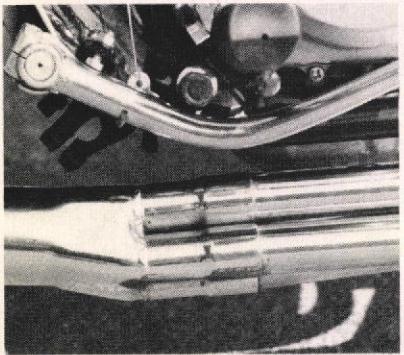
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tech tips

LEAK PROOFING HEADERS

Accessory 4 into 1 header systems usually come in 5 pieces consisting of four header pipes that slide into one collector. The fit is not always



perfect, resulting in exhaust leaks around the connections. Upon installation, coat the inside of the collector with silicone adhesive before sliding the header pipes into it and let dry before firing the engine. The silicone makes a good seal that won't burn away.

SAVE THAT FOAM RUBBER

Old discarded foam rubber can be made into several useful articles for the motorcyclist. Off-road riders can cut one inch foam into the shape of



a large donut and by slipping it over the throttle grip, it becomes a neat thumb pad. Have you ever had a gas cap that seeps gas after the tank has been filled? By simply placing another foam donut washer around the cap the rubber will soak up any overflow.

THROTTLE PROTECTION

If you're going riding in the brush with your enduro, it is a good idea to protect the throttle cables. A short length of plastic pipe (tube) is just the ticket. Cut to length and se-



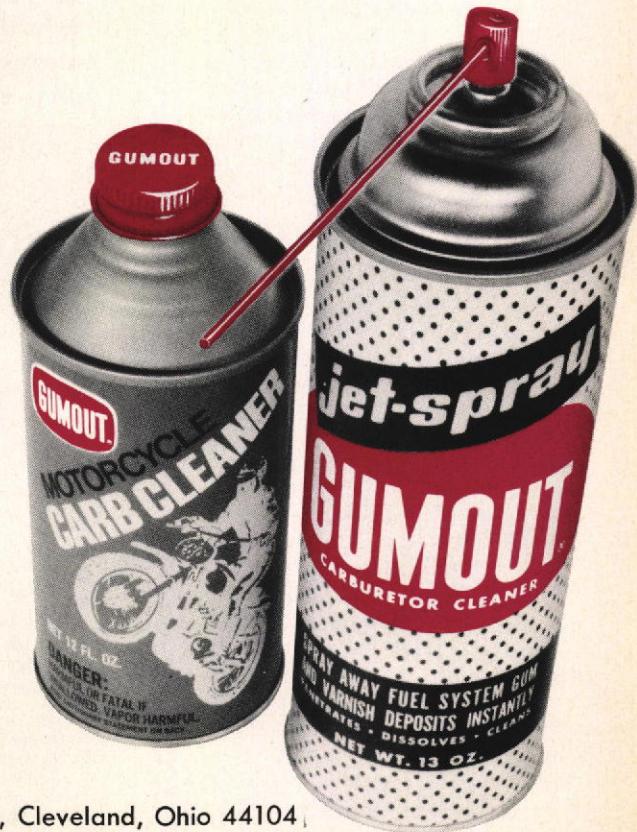
cure with black tape or cable ties. Install the easy way if you don't want to take the trouble to disconnect the cable; just slit the tube lengthwise and slip it over the cables.

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CZ 250 ENDURO

continued from page 79

plate clutch; it rests in a cavity void of primary oil.

Transmission mainshaft and layshaft ride in caged ball bearings. Again, the output shaft is fitted with a double set of balls to compensate for the extra load. The kick starter uses first gear and it's got to be in neutral to be started. Gear engagement is through sliding dogs and uses three shifting forks on the gear selector cam. Throw of the shift lever is extremely long, CZ fashion.

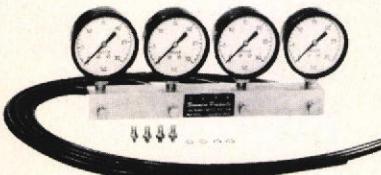
The bike has neither oil pump nor oil injection system. You mix it at about 25 to 1. It is not unusual in Europe to pull into a gas station and have a ready-mixed fuel pump sitting next to Regular and Ethyl. Because of this the injector is not felt to be necessary.

Two great differences separate the enduro from the moto-crosser, an extremely wide-ratio gearbox and torque instead of horsepower. Powerwise the engine has enough to get you there. It doesn't explode, it pulls and grunts.

The gearbox is far out, with a 38% drop between 1st and 2nd, and a 3.11 gear spread 1st to 5th. The percentage progressively gets closer as you climb up the scale, ending with a 15% drop from 4th to 5th. My preference is to close up the first four and take the long step to 5th. The present gearbox works well on fast cross-country and on dirt roads, only leaving a hole when you accelerate from near-stopped conditions. Like Honda's MR, there's just too big a step between the first two gears.

A great selection of tools comes in the toolkit, yet there's no provision to carry it on the bike. Three countershaft sprockets—17, 18 and 19—are part of the purchase price. The 18 is fitted. We found this to be a nice highway cruising gear and wondered what the

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19 would be good for. In order to get satisfactory off-road performance, we fitted a 15-tooth sprocket; these are also available.

The bike always started well except one time when we left it sitting with the fuel shutoff on. We pushed it about 50 feet in second gear to make it go. Otherwise it's just a simple matter of tickling the carburetor and kicking with the throttle only slightly open.

The power is very smooth, didn't notice any vibration. We shot some hills in second and the thing broke traction most the way up. It likes to keep both wheels on the ground at all times and

doesn't have stiff forks to help pop the front wheel up. Bike is best suited for woods and trail riding, with heavy leanings toward fireroads. Got to be careful here because it lacks the HP to get you out of trouble in 4th and 5th.

Exhaust note is not the quietest we've heard, about normal. In fact, engine whine and gear noise is more noticeable. Only one thing keeps me from taking this bike straight out to an enduro, the speedometer. If only they had mounted a speedo with a tenth-mile resettable trip. Then I'd have the first orange and yellow howlin' Czech trail duster in the neighborhood. •



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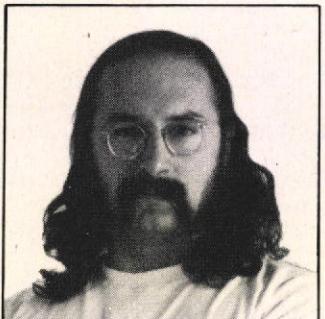
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HONDA MR 175

continued from page 61

so-called wide ratio five-speed MT125's of 2.92. Granted, the MR175 gives you the versatility to pull a stump with low gear and have the capability to run 70 mph in 5th. But what about those long steps that little engine has to take in order to go from one gear to the next? You may want to accelerate up a hill in first, peak it out and shift to second. Sometimes it will pull second and sometimes it won't, depending on the grade and how quickly you made the shift. And if you didn't make a clean shift you've got another problem.

The engagement dogs, those steel knobs that lock the gears together each time you shift, are straight cut, same as the MT and most of Honda's street bikes. The CR's dogs are cut on an angle, much like dovetailing, so once they engage the force sucks them together. A few missed shifts with the MR or MT and you've got rounded dogs and a second gear that gets progressively harder to use.

For competition work, having the proper gear at the proper time is most important. And the smaller the engine the more critical this becomes. That's why many of the dinky ISDT bikes have 9 and 10 speeds.

400s have a broad enough powerband to bridge these spaces. The MR175 is actually an overbored MT125; well, almost. A 50mm stroke is the same for both with the 175 piston 10 mm bigger at 66. Honda didn't just push a new liner into the old cylinder; they cast up new ones. The head is also new and although they are of the same configuration, the 175 pieces have at least 30% more cooling area.

Power is good, although not a bullet like the Can-Am or Penton. There's enough to jerk the front wheel up in 1st or 2nd. The MR is pipey yet has enough flywheel and low end pull to make it a pleasurable bike to ride. It's very comfortable sitting or standing with all the controls within easy reach. The fat fuel tank looks gorp yet blends into an equally fat seat. The bike is made for sitdown riding over long stretches of open country. It's probably got a 100 mile range if you're at all conservative with the throttle. It is going to get better than 50 mpg on the pavement any way you look at it.

Honda intended this to be purely a competition bike. No battery, no turning indicators, and no automatic oil injection. The Trelleborg-like Bridgestone tires are off-road and good. It is a bike built to go out and do battle in enduros and ISDT qualifiers, knowing full well that most will be used for casual off-road playing. And it's a good thing too, because it won't cut it against the Pentons and Cah-Ams. Honda built a bike just one gear short of being great.

PRIMARY DRIVES

continued from page 74

then installed in the threaded bosses. As the bolts are tightened, the springs are forced against the bottom of the pressure plate cups while their outer ends are resisted by the bolts in the hub bosses, thus providing the necessary clamping force.

Visualizing the workings of the multi-plate motorcycle clutch is complicated by the fact that the driving and driven halves cannot be assembled separately. They must be built-up together to maintain the proper balance of alternate driving and driven plates. Also, for the sake of clarity you must bear in mind that the plates, both driving and driven, are allowed to float laterally. They are fixed only with regard to rotation, but the driven plates can move to and fro slightly along the hub splines and the driving plates move similarly in the basket. So, in this respect, the pressure realized by all plate surfaces is identical because of this self-equalizing ability. Furthermore, there is a rule to remember which puts all clutches in order: there is always an equal number of driving and driven surfaces.

Clutch disengagement is achieved through a variety of methods, all of which share the same goal: to relieve spring pressure from the plates. Most commonly, a hollow transmission input shaft is used to house a clutch release rod. This rod bears either directly or indirectly on the pressure plate. Hand pressure at the lever can be magnified by a lever, ball ramp, rocker arm, rack-and-pinion or cam release at the input side of the rod. Movement of the rod against the pressure plate will relieve the driving and driven plates of squeezing, thus allowing them either partial or complete disengagement. Interesting departures from the general norm described above are the Hodaka, with its fixed pressure plate, sliding basket, crankshaft-mounted clutch; the Honda 750 "inside-out" clutch with its internally mounted pressure plate; and the MX Suzuki clutch which releases pressure by "pulling" the pressure plate away rather than by "pushing" it via hollow transmission shaft and rod.

The space limitations inherent in magazine publishing preclude us from going into greater detail concerning the fundamentals of clutch and primary drive design. We have discussed only superficially the dynamics in both these areas. Volumes have been written about primary drives and clutches and we don't pretend to offer all the answers in these few pages. Nevertheless, the name of this series is *Bike Basics* and in it we aspire to provide the reader fundamental explanations of how these things work.

In next month's *Bike Basics*, we unravel transmissions.

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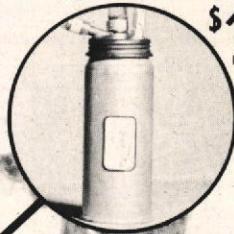
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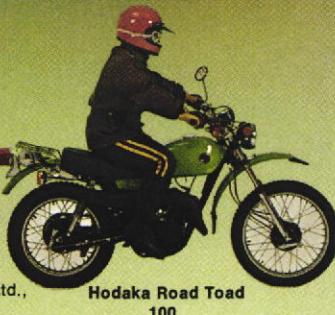
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